December 8, 1958

Paper Trade Journal

Practical Aspects of Laying the Sheet on the Wire in Fourdrinier Operation

Applications for Heat Exchangers in the Mill

Big West Coast Mill Celebrates 75th Year

Report on Outside Chip Storage in the South

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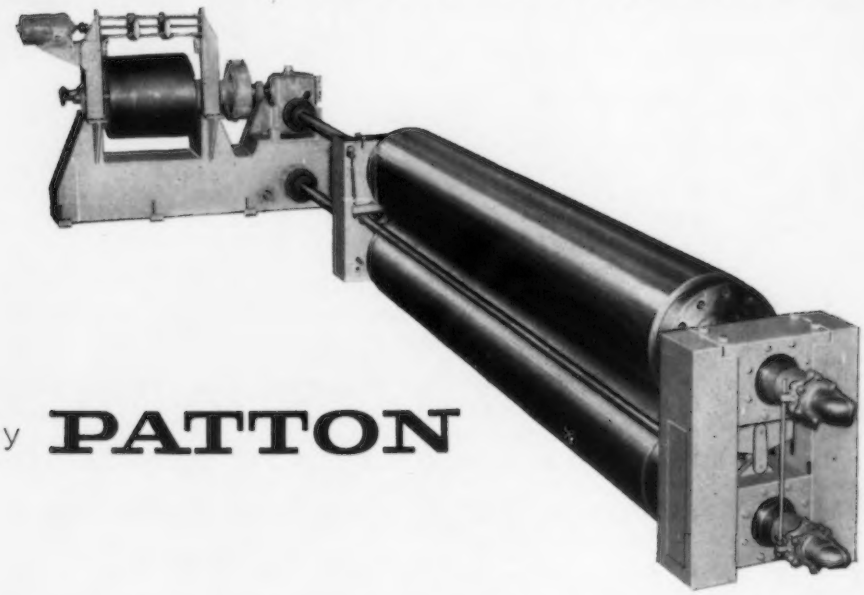

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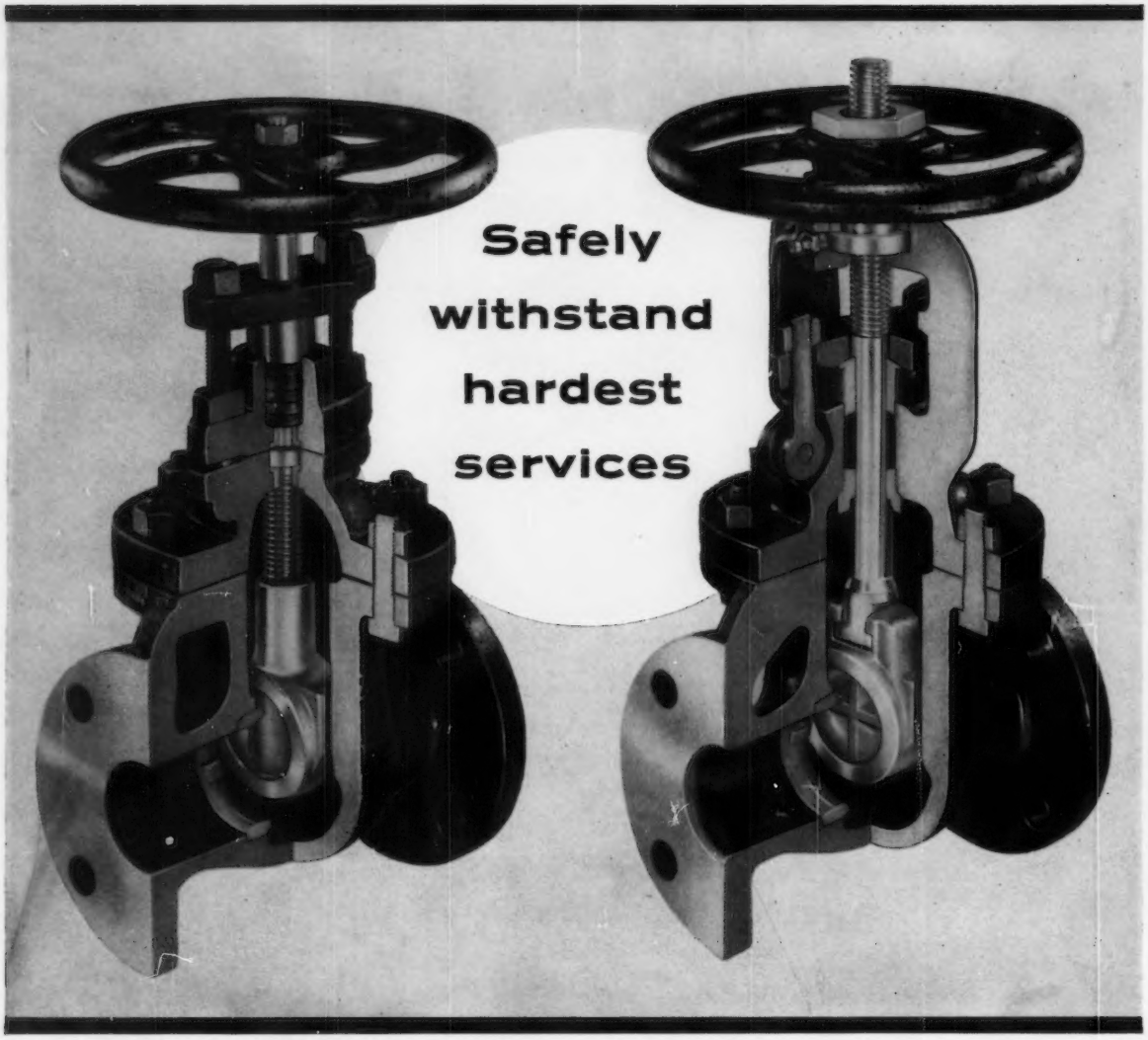

Fig. 1138 (left) non-rising stem, Fig. 1140 (right) OS&Y... two of 29 OIC iron valves with steel valve features. Metals used for trim and pressure parts in this line include: bronze, manganese bronze, nickel-plated steel, higher strength iron, nickel-alloyed iron, Monel, 18-8 stainless, 11-½-13 chrome.

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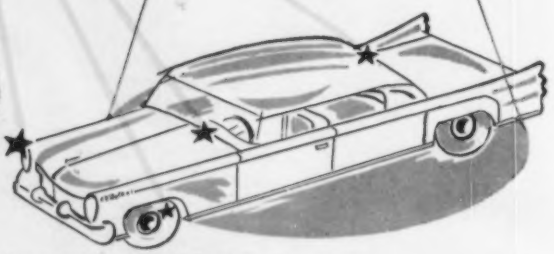

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Feb. 23-26, 1959: Paper Week in New York

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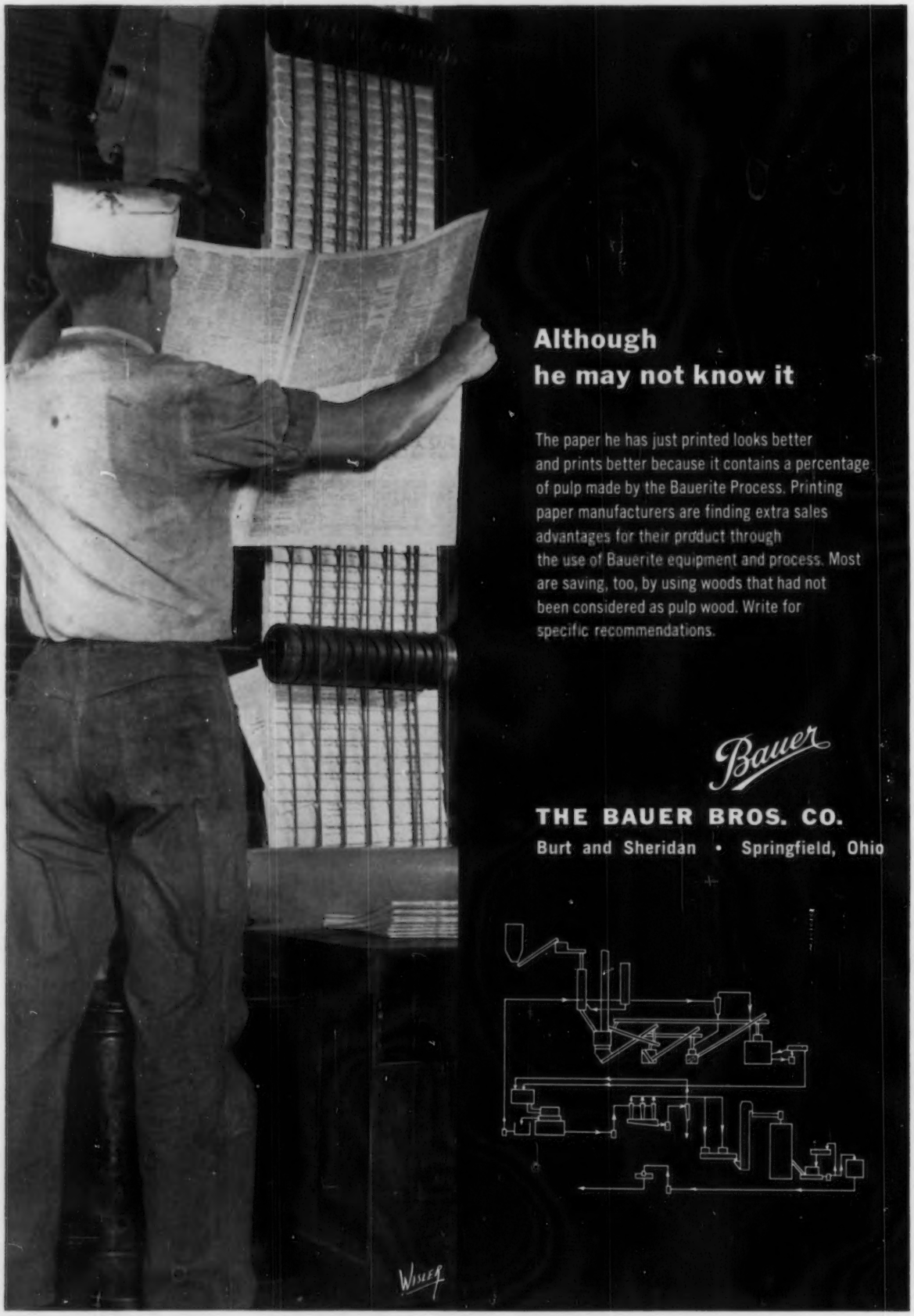
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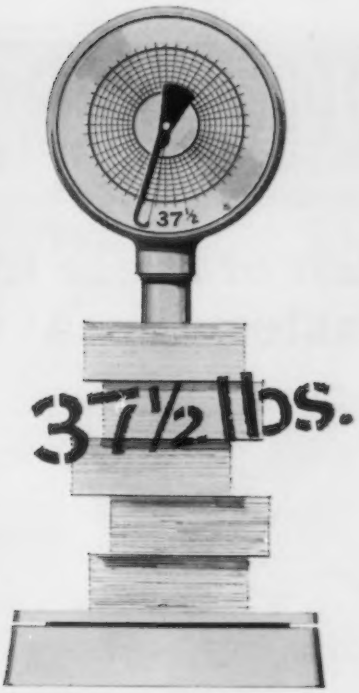

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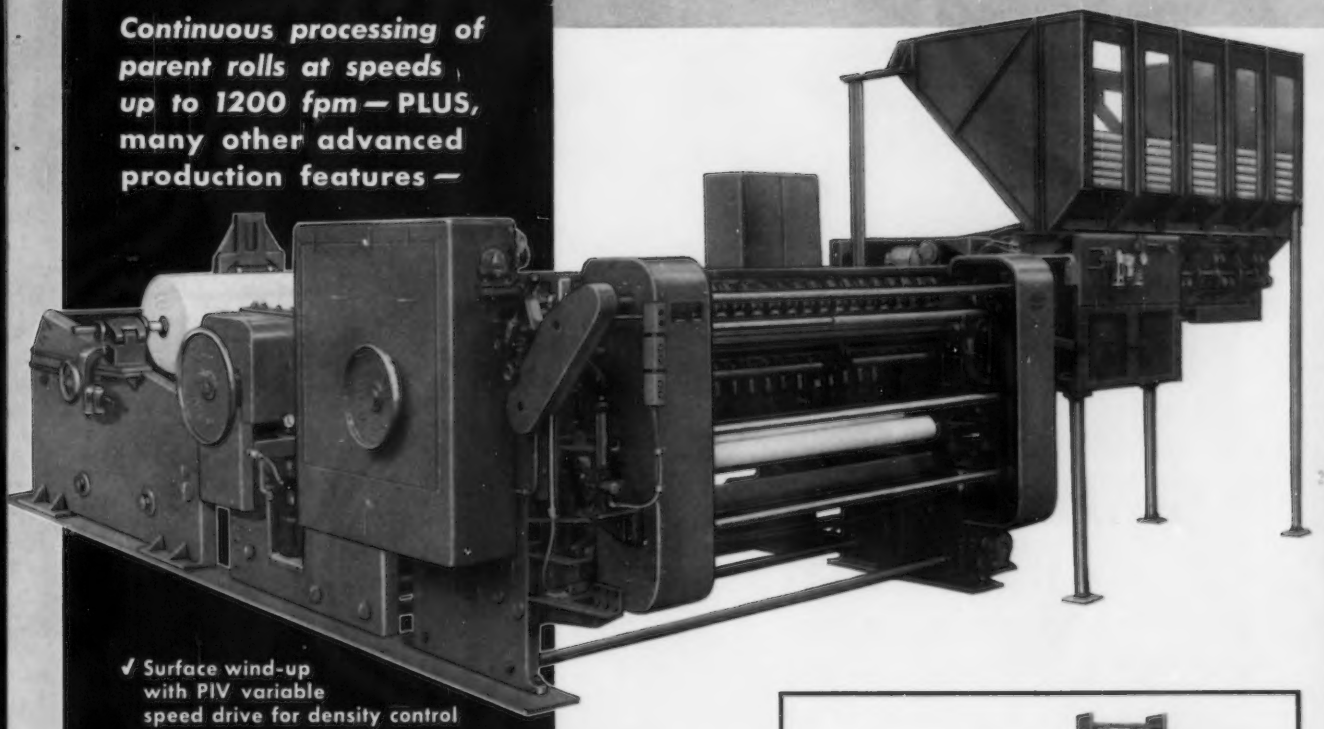

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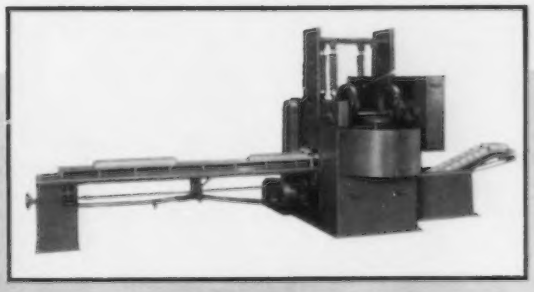

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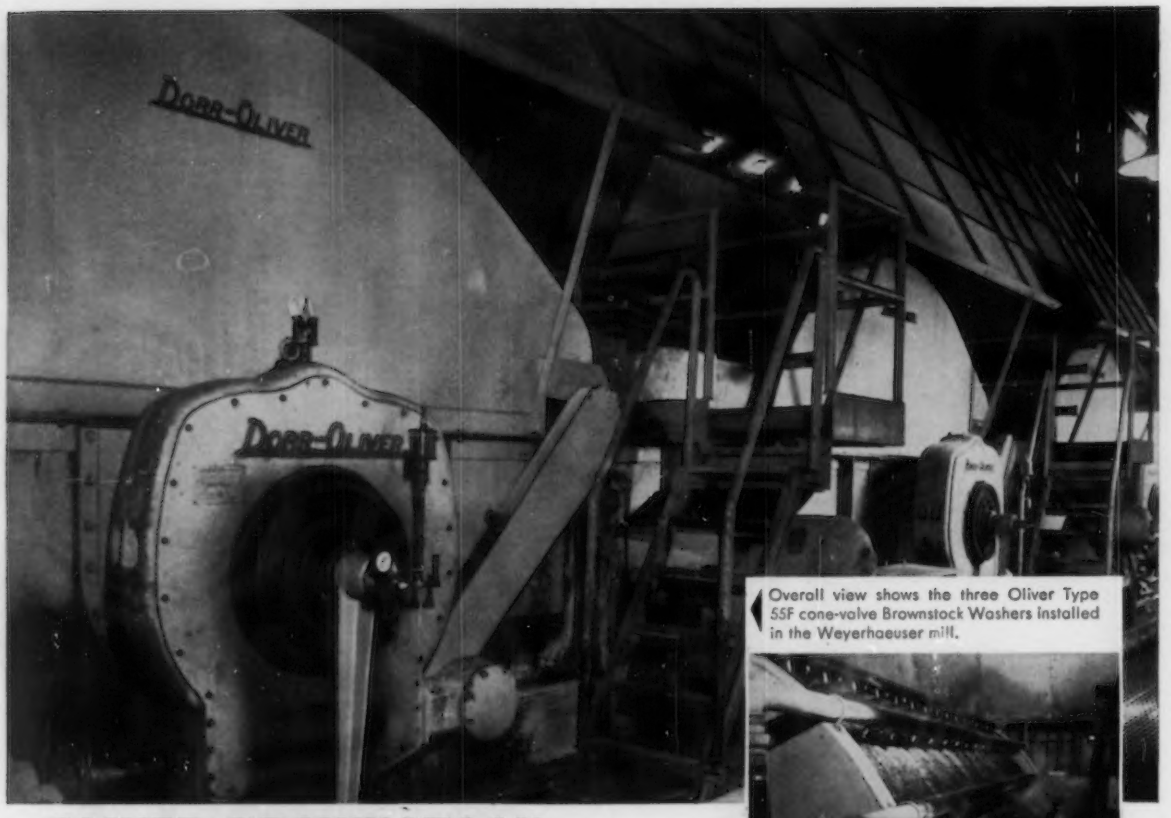

Overall view shows the three Oliver Type 55F cone-valve Brownstock Washers installed in the Weyerhaeuser mill.

Three stages of the washing operation are shown in these photos. Note the clean, uniform sheet formation in the final stage.

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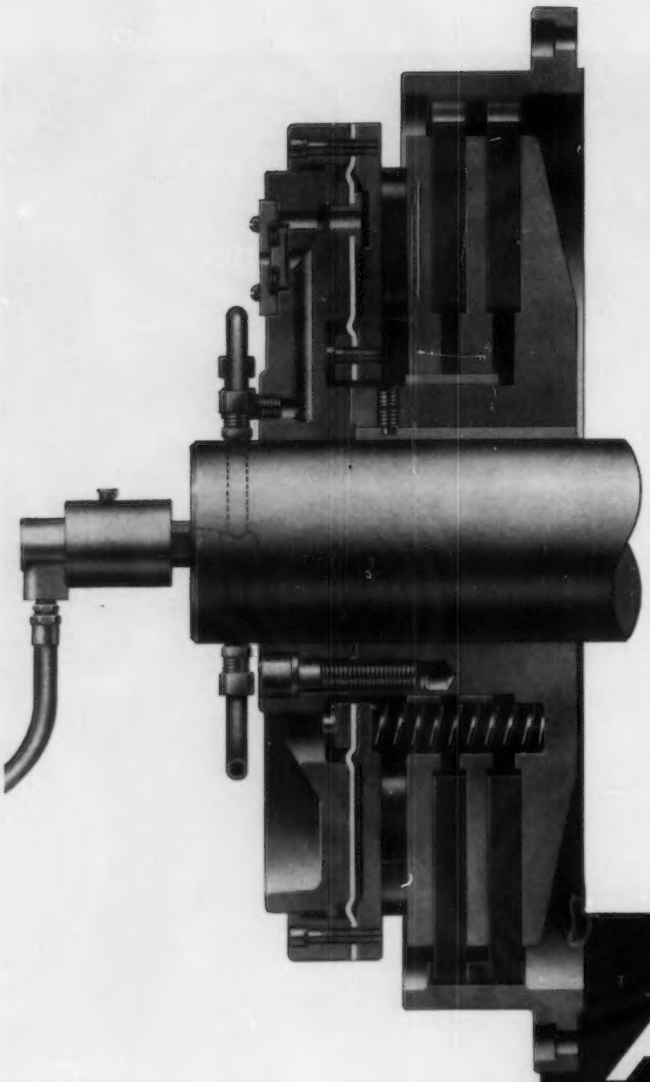

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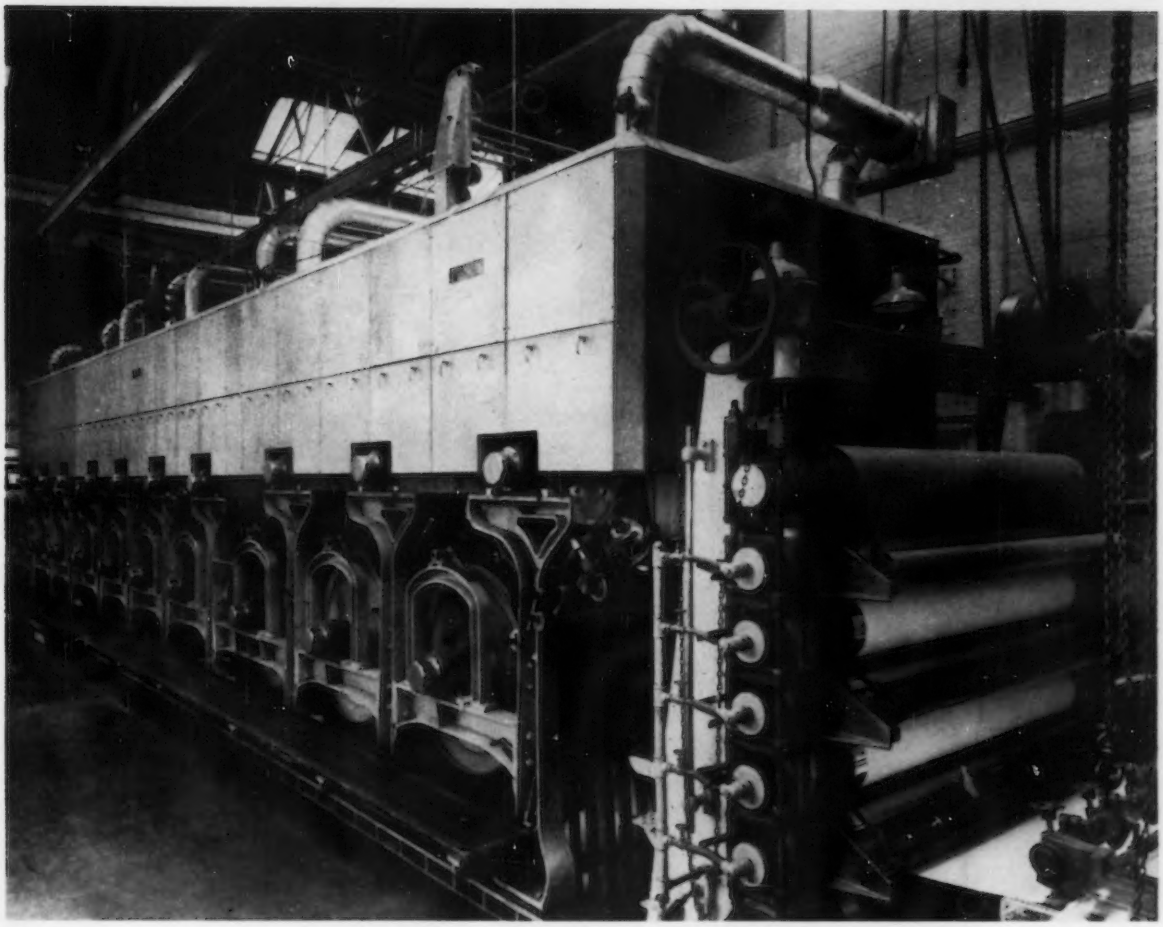

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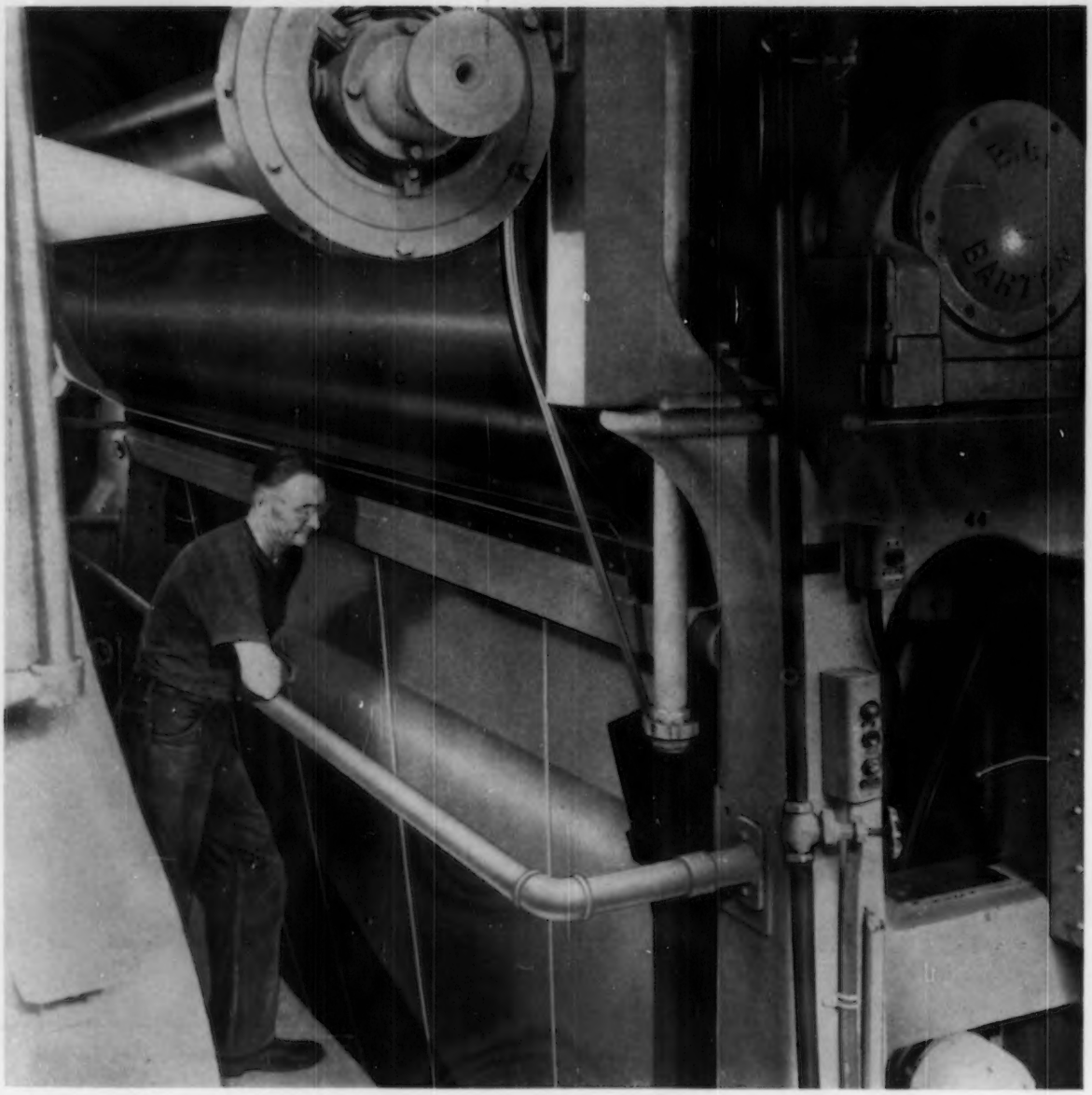

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Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

New motor development obsoletes today's application practices!

Only from Allis-Chalmers!

Super-Seal motors save up to 60%

Here's an amazing advance in motor technology! It's the *Super-Seal* motor line—an open motor design so completely unaffected by moisture, dust, dirt, oil, acids and alkalies that it can be used in many applications previously requiring more costly enclosed motors. *Savings range from 15 to 60%.*

Super-Seal motor superiority results from two distinct revolutionary insulating techniques. Available in any integral horsepower size, smaller *Super-Seal* motors incorporate a *Poxeal* stator. A durable epoxy resin encloses the stator, creating an electrical system impervious to outside elements.

In larger sizes, *Silco-Flex* insulation is used. In this system, silicone rubber is vulcanized into a homogeneous mass to form a flexible, moisture and heat resistant, void-free dielectric barrier around coils and leads.

Both of these insulation systems are unsurpassed. Proof? An encapsulated motor ran for hundreds of hours at full load in a 4% brine solution.

Find out more by reading the next pages; then contact your A-C representative or distributor, or write Allis-Chalmers at address shown on back page.

AC ALLIS-CHALMERS

518 9100

Two revolutionary insulating techniques developed and pioneered by Allis-Chalmers mean savings of millions of dollars for motor users . . .

New open motors are unaffected by moisture and contaminants

Modern insulating materials and new methods of application, now available in *Super-Seal* open-type motors, are drastically changing motor application standards. These insulations are so completely impervious to moisture and contaminants that *Super-Seal* open motors can be used in most applications formerly requiring costly enclosed designs. Existing applications have resulted in savings as high as 60%.

Basic insulation systems

Larger *Super-Seal* motors with form-wound stator coils use the *Silco-Flex* insulation system. Heart of this system is a remarkable rubber-like silicone elastomer, applied in semi-cured state and vulcanized to form a void-free, impervious dielectric barrier. More than four years of development and field testing have proven the superior electrical and physical properties of *Silco-Flex* insulation systems.

Stator coils of smaller random-wound motors are protected by equally effective *Poxeal* insulation system. A tough, durable case of epoxy resin completely seals the winding end turns and slot portions. Bonded to the stator laminations, it forms a seal completely impervious to contaminants.

Moisture resistance

In addition to being void-free, the silicone elastomer used in *Silco-Flex* insulation is moisture repellent. Even in high humidity, moisture does not form a surface film of condensation. Coils with this protection can operate completely immersed in water. In fact, one of the recommended cleaning procedures is use of detergent and water.

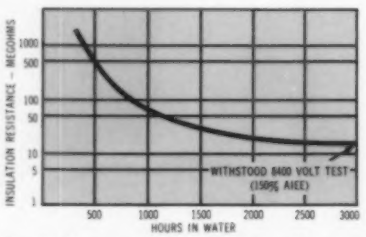


Fig. 1—Test curve shows insulation resistance of *Silco-Flex* insulation while immersed in water.

Moisture resistance of *Silco-Flex* coils is demonstrated in Fig. 1. After more than 3000 hours of total immersion with 2300 volts impressed on the coil, the test was terminated when it became apparent that little more drop could be expected in the coil's insulation resistance. At that point the coil still withstood a high potential test of 8400 volts without injury.

Encapsulated stator windings are equally well sealed. Motors with *Poxeal* insulation protection have been thoroughly tested under water while operating with full load and full voltage.

Resistance to contaminants

Silicone elastomers and epoxy resins are relatively inert to attack by practically all reactive agents. Further, the void-free construction of insulation systems used in *Super-Seal* motors prevents penetration of contaminants. As a result, *Super-Seal* motors are unaffected by oils, most acids, salt solutions, alkalies, and oils and are ideally suited for such applications.

Thermal stability

Temperature-wise, *Silco-Flex* insulation can easily withstand hot-spot temperatures of 200 C and more—

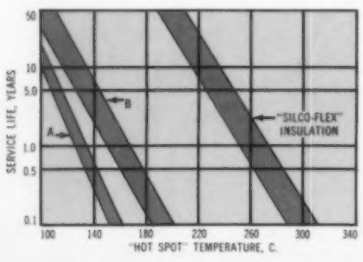


Fig. 2—Chart shows that *Silco-Flex* insulation more than meets Class H requirements.

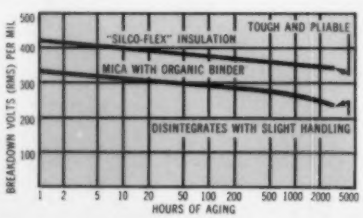
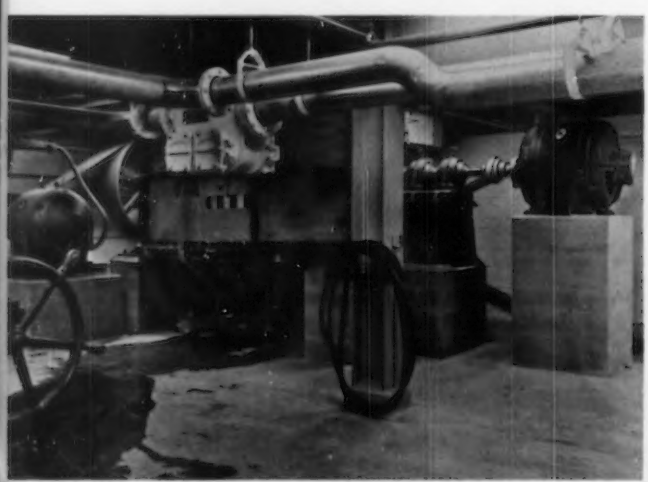


Fig. 3—Tests of 2300-volt insulated bars show thermal stability of *Silco-Flex* insulation.



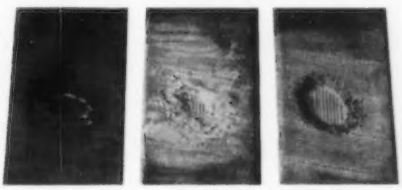
Paper mills have wide application for *Super-Seal* motors because of moist atmospheres.

easily meeting Class H temperature requirements (Fig. 2). At temperatures where the life of Class B coils would be measured in weeks, the life span of *Silco-Flex* coils is well beyond machine obsolescence.

Comparison with a mica-organic binder insulating system (Fig. 3) offers further proof of thermal stability. After 2000 hours of aging at 200 C with 8500 volts applied continuously, the *Silco-Flex* insulated coil was still tough, pliable, and completely serviceable. The mica-taped insulation had deteriorated to the point where it disintegrated readily and was completely useless.

An added advantage of *Silco-Flex* insulation is unusually high thermal conductivity — about twice that of conventional insulations. This means heat dissipates faster from its point of generation.

Poxeal insulation also demonstrates remarkably good thermal stability. Materials now in use are suitable for Class B temperatures, although actual classification of the insulation is determined by the basic material used.



Silco-Flex Insulation | Polyester Mica Tape | Asphaltum Mica Tape

Fig. 4—Samples of motor insulations after sandblasting give comparison of abrasion resistance.

Abrasion resistance

Resistance to abrasion is still another point of superiority in the insulation systems used for *Super-Seal* motors. Abrasion resistance of *Silco-Flex* insulation is compared to other types of insulation in Fig. 4. After one minute of sandblasting with 90-grit aluminum oxide and 100-psi air, only slight surface erosion appeared on the *Silco-Flex* sample. Other insulations were eroded to bare copper.

Application practices obsolete

The superior qualities of *Super-Seal* insulating systems, developed by Allis-Chalmers, make it necessary to reappraise present application practices. With virtually ageless insulation, *Super-Seal* motors assure more reliable service and require less upkeep than the best protected, conventionally insulated machines — and at considerably less cost.

Super-Seal, Poxeal, and Silco-Flex are Allis-Chalmers trademarks.

CHRYSLER KIMBERLY-CLARK GOODYEAR SOUTHERN CEMENT CONTINENTAL CAN AMERICAN OIL CELOTEX SCOTT PAPER HURON PORTLAND CEMENT FORD FIRESTONE PACIFIC GAS & ELECTRIC STANDARD OIL OF INDIANA B. F. GOODRICH DOW CHEMICAL MARLEY INGERSOLL-RAND LINK-BELT

WIDE ACCEPTANCE

of Super-Seal motors proves their advantages

Cement, petroleum, chemical, steel, mining, paper, utilities, municipalities and general industry — outstanding corporations in every field are specifying *Super-Seal* motors wherever operating conditions are tough.

Cost and *superior insulation* aren't the only reasons. Users are getting MORE MOTOR, too. Here's why:

Standard totally-enclosed motors, 55° C rise, have a *service factor of 1.* In other words, "nameplate" horsepower is the maximum. A 40° C rise *Super-Seal* motor with *Poxeal* insulation, and a 60° C rise *Super-Seal* motor with *Silco-Flex* insulation have a *service factor of 1.15.* For comparisons on what this difference means in required motor sizes, see this chart:

Rated Horsepower (Maximum Hp, TEFC)	Maximum Continuous Hp—Super-Seal Motor
15 hp	17.25 hp
25	28.75
40	46
75	86.25
125	143.75
200	230
350	402.5
500	575

Join the swing to *Super-Seal* motors. It will pay dividends fast. Contact your A-C representative or distributor, or write Allis-Chalmers at address shown on back page.

ALLIS-CHALMERS AC

SOUTHERN CALIFORNIA EDISON LONG ISLAND LIGHTING AVCO UNION BAG UNIVERSAL ATLAS UNION CARBIDE OHIO OIL INTERNATIONAL PAPER SOUTHERN PACIFIC PIPE LINE ALCOA ROHM & HAAS ARMOUR SHELL OIL COMMONWEALTH EDISON OWENS-ILLINOIS WYANDOTTE CHEMICAL BETHLEHEM STEEL ALLEGHENY-LUDLUM MEAD DU PONT DETROIT EDISON ESSO HERCULES POWDER SINCLAIR PIPE LINE GENERAL TIRE MONSANTO

This *SUPER-SEAL* MOTOR application SAVED $3000!

Find out how much you can save

This application of a *Super-Seal* open-type motor — in place of a weather-protected design of the same rating — *saved the user $3000.00!*

You can achieve similar savings! Fill out the data sheet below and *find out for yourself how much you can save — on a "no-strings-attached" basis.*

Here's what to do: 1) Select an enclosed motor application in your operations (a new motor need or, for comparison, a motor just purchased); 2) fill out the data sheet; 3) mail to the address shown.

We'll give you a cost quotation on a *Super-Seal* open motor for that application.

Fill out this data sheet—

no strings attached—to find out how much you can save on a new motor or on an existing motor installation

To: **ALLIS-CHALMERS**
888 S. 70th St., Milwaukee 1, Wis.

Motor Data

1. Type (i.e., squirrel cage):

Horizontal ☐ Vertical ☐

Hp..... Rpm.....

2. Phase..... Frequency.....

Voltage.....

3. (For synchronous only)

Power factor.....

Starting torque.....

Pull-in torque.....

Pull-out torque.....

Application Data

4. Description of application:

5. Drive: Direct-connected ☐

V-Belt ☐ Other:.....

Starting load.....

Ambient temperature.....

6. Operating conditions:.....

Dirty ☐ Clean ☐ Wet ☐ Dry ☐

Other.....

Information on Existing Motors

(for comparison)

7. Type of insulation

Type of enclosure

Time rating.....

Temperature rise.....

Bearings:

Anti-friction ☐ Sleeve ☐

8. Special characteristics or construction:

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

A-5869

ALLIS-CHALMERS

This great new ODOR-FREE FOOD WRAP COATING Emulsion

Saves you up to 25¢

COLD CASH on the dollar

Dewey and Almy's New **EVERFLEX MC-300**

MICRO-PARTICLE PAPER COATING EMULSION

EVERFLEX MC-300 is up to *twenty-five per cent less expensive* than traditional low odor polymers used for food wrap paper coating. Yet this new emulsion is perfectly engineered for these exacting applications; when the consumer opens the package, the only aroma she'll find is the freshness of the product itself!

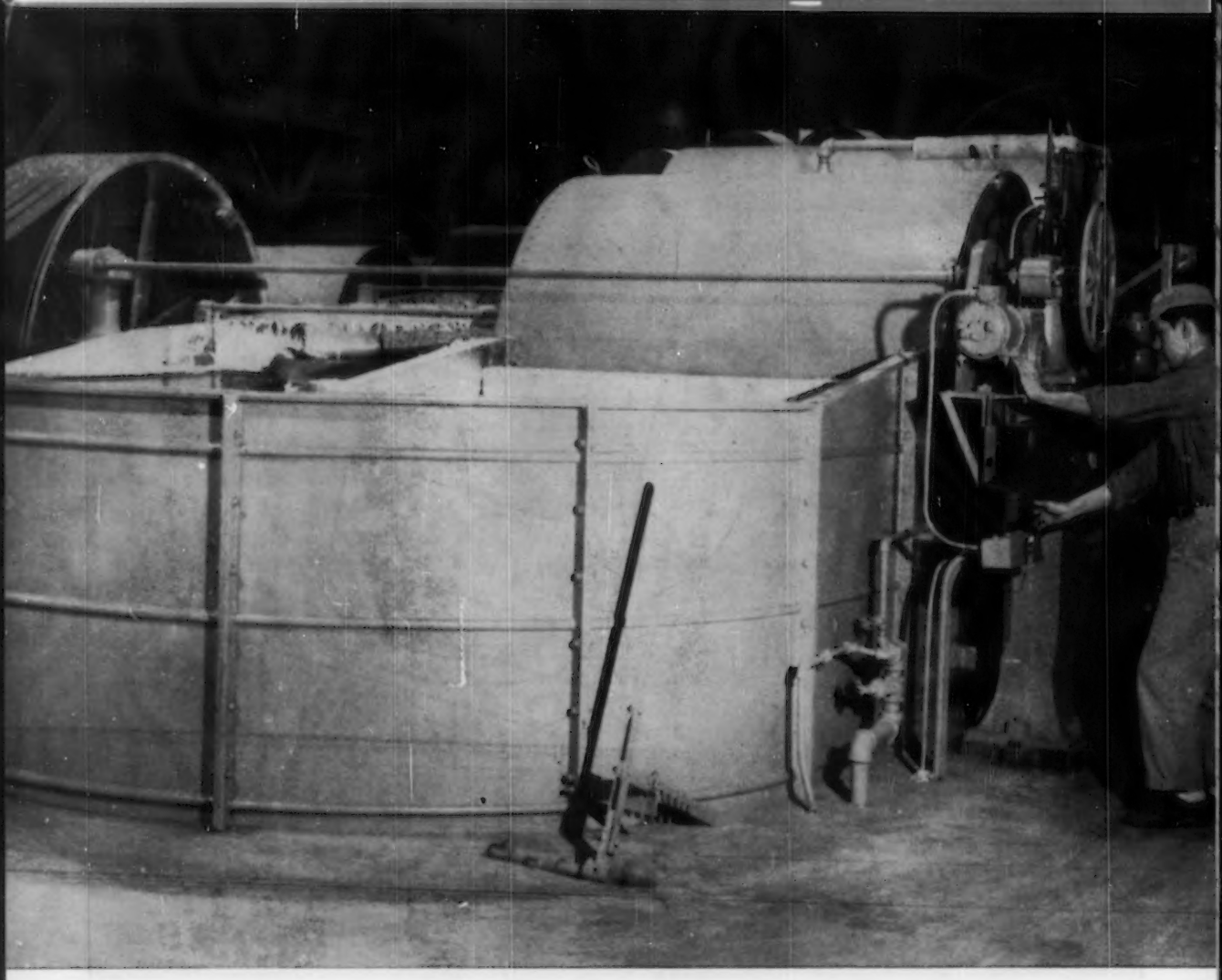
EVERFLEX MC-300 is grease-resistant, non-yellowing and highly flexible, too. It offers higher color stability and better pigment binding power. Its fine particle size, averaging only 0.1 micron, binds coating colors tightly, securely. Ideal for both offset and letterpress printing, its pick-, crocking-, and water-resistance provide new standards of excellence in coated food wrap papers.

Write today for free informative brochure on EVERFLEX *MC-300 and other members of the outstanding* DAREX *family of paper coating emulsions. It points the way to better products and bigger profits for you.*

W.R. GRACE & CO.

DEWEY and ALMY CHEMICAL DIVISION

62 Whittemore Ave., Cambridge 40, Mass. • 100 W. Monroe St., Chicago 3, Ill. • 225 Allwood Rd., Box 361, Clifton, N. J. • *West Coast:* 2140 Davis St., San Leandro, Calif.



Stainless Steel keeps pulp clean

If you want bright, spotless paper, you have to keep the *pulp* spotless. In the beater shown here, that's a tough job. The pulp is like wet blotting paper. It can pick up the smallest speck of dirt, rust or corrosion. Yet the pulp stays clean because the beater is lined with Stainless Steel.

Unlike many other metals, Stainless Steel resists pitting and corrosion from chemicals used in papermaking. There is no pitting and there are no flakes of corroded metal to foul the pulp. And because the dense Stainless Steel surface is so easy to clean between batches, there's no danger of color carry-over to affect new colors.

When you install new equipment in your plant, specify corrosion-resistant Stainless Steel. It lasts years longer on the toughest jobs.

United States Steel Corporation – Pittsburgh
American Steel & Wire – Cleveland
National Tube – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

USS TRADEMARK

United States Steel

Trends

Paper and Board Did Well Last Month

Paper and board mill capacity ratios for November showed the usual effect of the Thanksgiving holidays and were off slightly from October. Final figures should be close to 91% for paper and 93% for board, both being slightly higher than November last year. Actual tonnage was, of course, well ahead of November 1957 due to the intervening increases in capacity.

Climb Out of Saucer Slows

Recent Federal Government indices of business and the general economic climate indicate that the climb out of the recession continues but at a greatly slowed rate compared with earlier this fall.

Inquiries Reflect Industry Optimism

Optimism of the paper and board industry is reflected by the number of inquiries that equipment manufacturers are receiving for proposed expansions and new mills. Supplier salesmen report that they are receiving many requests for quotations and meetings with company planners.

Set-up Box Production Lagging

Set-up box sales in the first ten months of this year were off 6.4% from the same period in 1957. October 1958 was off 2.1% compared with the same month last year, according to the National Paper Box Manufacturers Association.

Some Softening in Waste Papers

Waste paper markets in the Chicago and New York areas have shown small price drops for lower grades and kraft corrugateds.

Bullock Report Sees Continuing Rise

It would appear that the paper industry is in a healthy condition, and, if its past barometric qualities prove reliable, it is forecasting an improving level of general business activity in 1959, according to the November issue of "Perspective," published by Calvin Bullock, Ltd., managers of mutual funds. The publication pointed out that for many years it has been recognized in economic circles that the trend of paper and particularly paperboard consumption was an excellent guide as to the course of general business activity. For the longer term, the publication said, it is estimated that by 1965 U. S. net demand for paper and board would total 43.8 million tons, an increase of 40% over peak 1956 production of 31,336,000 tons. "It might be well to point out a few negative aspects over the short-term for this industry whose long-term continued growth seems apparent," the study said. "Estimated capacity in 1959 will be about 37 million tons while estimated production for next year is 32-32.5 million tons. Obviously this surplus capacity will have a restraining influence on needed price advances, and it is difficult to see 1959 earnings equalling peak 1956 results."

The editors feel that the capacity figure quoted above for 1959 is a little high and that the probable production figure is on the low side so that there will not be as big a gap as indicated between demand and capacity.

has proved successful
in solving
FOAM PROBLEMS
throughout the pulp
and paper mill

Information on request

R. T. VANDERBILT CO., INC.
230 Park Avenue, New York 17, N. Y.

Std. Packaging to Acquire Chemical Paper

Negotiations have been completed for the sale of the Chemical Paper Manufacturing Co., Holyoke, Mass., to the Standard Packaging Corp.

The five machine Chemical mill and the two machine Crocker-McElwain division are involved.

Ralph H. Morill of Harvard St., president of Chemical, made the announcement of the plans for the sale. This transaction is subject to the approval of the stockholders of the Chemical, who will meet in special session here December 15. If the sale is approved, the transfer will be effected in the last week of the month.

Under the agreement Standard will take over all of the business presently conducted by Chemical, including plants, equipment, inventory and supplies. The present management and employes of the Chemical will continue to operate the business as a division of Standard, the parent organization assuming all liabilities and commitments of Chemical.

Standard Packaging Corp. is one of the fastest growing major units in the nation's paper industry. Recently it acquired the Eastern Mfg. Co. of Bangor, Me., and it is anticipated that its Holyoke acquisition will tie in with the Eastern's operation.

The two firms, Chemical and the Crocker, were separate organizations that had a close association thru stock ownership and directors. In June 1957, these two corporations were merged into the Chemical Paper Manufacturing Co.

Standard Packaging Corp. purchased Mississquoi Paper Co. of Sheldon Springs, Vt., and its affiliate the Fonda Containing Corp. of St. Albans, Vt. a few years ago.

Flintkote Merger Approved

Stockholders of the Flintkote Co. at a special meeting in Boston approved the merger of the Hankins Container Co. into Flintkote and the purchase by Flintkote of all the assets and business of Orangeburg Manufacturing Co., Inc.

I. J. Harvey, Jr., chairman of Flintkote, said it's contemplated the merger and acquisition will be effective December 1.

After the meeting Mr. Harvey said that including these acquisitions, "I think our sales for 1958 will be around $160 million and we ought to earn $3 a share."

He declared, "We're definitely in a recovery period and next year will be a big building year." The period 1960-65, he said, "will be the biggest building years the industry has ever had."

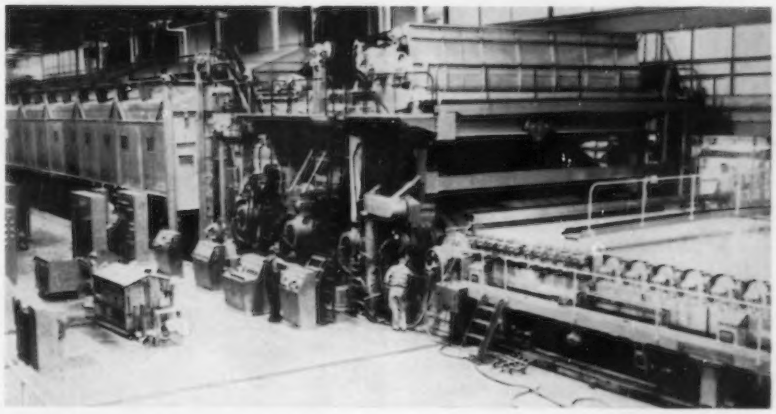
Under the terms of the merger and acquisition, each of the 267,458 common shares of Hankins will be converted into 1,234 shares of Flintkote common, an aggregate of 330,043 shares. Orangeburg will receive in exchange for its assets a newly created issue of 132,416 shares of $4.50 Series A convertible second preferred stock which shareholders approved at the meeting.

Southland Starts Up New Machine

Announcement was made on November 26, of an exceptional start-up of a new newsprint machine at Southland Paper Mills, Inc., Lufkin, Texas. The 270-inch wire-width fourdrinier machine is reported to have produced press-ready paper within 90 minutes after it was started.

The machine, the company's fourth fourdrinier, was purchased from the Pusey and Jones Corp. It is designed to run at 2500 f.p.m.

The fourdrinier wire is 118 ft. long. The machine uses an air pressure type head box and slice with cross-flow stock distributor. The fourdrinier section is equipped with the Pusey and Jones Rapi-Drape wire handling system which permits quick changing and pre-draping of the wire. Hydraulic units raise and lower the 34″ diameter breast roll and operate the wire changer assembly.



New 270-inch wire-width Fourdrinier machine designed and built by Pusey and Jones for Southland Paper Mills.

Built at a cost of $3,000,000, the new machine has a five suction roll press part and 65 dryers. Fifty-five of these 60″ diameter dryers are paper dryers, eight are for felts and the remaining unit is a sweat dryer. The dryer section has high speed, enclosed gearing, steam joints with dual revolving syphons, and an automatic, motorized felt take-up and tension control. The sheet is threaded with a rope carrier, and the complete dryer section is enclosed within a Ross hood.

The eight roll calender stack and horizontal track reel are located 400 feet from the headbox. The stack has an electric lifting system, Vickery type doctors and a Bowser lubricating system.

Conn. APPMSA to Meet in Jan.

The Connecticut Valley Division of the APPMSA will meet on Thursday, January 8th, for a buffet supper and meeting at 6:30 P.M. at The Publick House, Sturbridge, Mass.

Gilbert D. Kittredge, general superintendent of Crane & Co., Inc., Dalton, Mass. will give a talk on "Preventive Maintenance."

The next two meeting dates for the division have been announced by William F. Nye, Jr., secretary-treasurer, The Hubinger Co., West Springfield, Massachusetts. The first is scheduled for May 22, 1959 and will be held at Strathmore Park, Woronoco, Mass. The second, a joint meeting of the Connecticut Valley Division and the New England Section of TAPPI, will be held in October. The place and date will be announced later.

G. D. Kittredge

Name Change

This is to advise you that Thomson Paper Mills, Inc. has changed it's name to Angel Soft Tissue Mills, Inc.

Only our name has been changed: there are no changes in our corporate structure, directors, officers or ownership.

Please address all invoices or correspondence to:

Angel Soft Tissue Mills, Inc.
375 Park Avenue
New York 22, New York
Nat E. Heit
President

To Supply Paper Plant

The Egyptian Racta paper firm and the Fried. Krupp Co. of Essen have signed a contract under which the German organization will deliver DM45 million ($10.7 million) worth of machinery and equipment for a new paper mill. The new plant will turn out newsprint and writing paper. Its construction will be financed as part of a credit agreement which West Germany and the United Arab Republic concluded last May.

Crossett Plans Expansion At Mill

A $3,400,000 construction program that will expand production capacity by one-third at the Crossett Paper Mill's bleached food board mill was announced.

J. C. Hair, manager of The Crossett Co.'s paper division, said it was hoped the expansion program could be finished by early 1960.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending November 22, 1958, was 90.6 per cent compared with 91.5 per cent revised for the preceding week. The ratio was 92.7 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending November 22, 1958, was 94 per cent compared with 94 per cent for the preceding week and 94 per cent for the corresponding week last year.

(Detailed statistics on page 62.)

Canadian Instrumentation Meeting

An instrumentation symposium, jointly sponsored by the Process Instrumentation Committee of the Technical Section, C.P.P.A. and the Montreal Chapter of the Instrument Society of America, will take place in the Queen Elizabeth Hotel, Montreal on Tuesday, January 27th, 1959 at 2:00 p.m.

The program will deal with the setting up and operation of pulp and paper mill instrument departments and will feature a report and discussion of a survey of instrument departments that was carried out by the Process Instrumentation Committee. The chairman of the Symposium will be K. C. Kent, president, Montreal Chapter, Instrument Society of America and the program is as follows:

"Instrument Departments in Canadian Pulp and Paper Mills," by A. W. Rowe, New Brunswick International Paper Company and Chairman, Process Instrumentation Committee.

Panel Discussion—members of the panel will give brief descriptions of their instrument departments and answer questions from the audience.

Panel Members — J. T. Dykes, Howard Smith Paper Mills Ltd., T. R. Hall, Quebec North Shore Paper Co., J. Van Damme—Canadian Celanese Ltd., R. E. Bark, Du Pont of Canada Ltd.

AWARD LTI PAPER SCHOLARSHIPS—Dean of Students Richard W. Ivers of Lowell Technological Institute congratulates winners of $100 scholarships in paper engineering in memory of Dr. Geoffrey R. Broughton, left to right: Bernard Coyle of Salem, '61, Frank Zichelle of Fitchburg, '60, and Frank L. Rawling of Lowell, '59, as Prof. John Lewis, paper engineering department head, far right, looks on. Sponsors of the scholarships are: American Writing Paper Co., Byron Weston Co., Carter, Rice, Storrs & Bement Co., Champion-International Division of Oxford Chemical Paper Mfg. Co., Robert Gair Division, Crocker, Burbank & Co., Ass'n., Fitchburg Paper Co., Monadnock Paper Co., Strathmore Paper Co., Tileston & Hollingsworth Co., Nashua Corp.

Seidensticker Elected President of Chillicothe

Directors of the Chillicothe Paper Co., Chillicothe, Ohio, elected N. A. Seidensticker president and general manager and E. A. Hoey vice president and sales manager at its annual meeting, it was announced by D. F. Morris, president of The Mead Corp., Dayton, Ohio. Chillicothe Paper Co., manufacturers of fine white papers since 1919, is a wholly-owned subsidiary of Mead.

Mr. Seidensticker joined the Chillicothe Paper Co., in 1928 following graduation from Notre Dame University. His first job was in the traffic department. He was elected treasurer in 1945; secretary-treasurer in 1954; and vice president and general manager in 1957.

The newly-elected president succeeds Austin P. Story, who is retiring after 16 years as chief executive. Mr. Story, associated with the company since the date of incorporation, June 21, 1919, was elected as its second president and general manager in 1942.

Mr. Hoey, graduate of the University of Delaware, joined Chillicothe Paper Co., in 1928 as a salesman. He was named sales manager in 1953.

His predecessor, A. I. Cahill, is retiring after 33 years with the company. Mr. Cahill, employed as a salesman in 1925 and later promoted to sales manager, was elected vice president, sales in 1953.

F. L. Zellers, vice president, who joined the company in 1940, is retiring also at the same time as Mr. Story and Mr. Cahill under provisions of the Chillicothe Paper Co., Pension Plan.

Other officers of the company are George H. Pringle, vice president; H. L. Breiel, secretary-treasurer; T. J. Rigney, controller; and W. Walker Lewis, Jr., assistant secretary.

N. A. Seidensticker

E. A. Hoey

W. A. Thomas, mill manager, and Mr. Breiel have been named to fill the vacancies on the board of directors created by the retirement of Mr. Story and Mr. Cahill.

Other directors are Mr. Seidensticker, Mr. Hoey, Mr. Pringle, H. Warren Kampf, Nelson S. Mead, D. F. Morris, and H. E. Whitaker.

Cowan, McCabe Join FPA Fund Campaign

Louis G. Cowan, president of the CBS television network, and Thomas B. McCabe, president of the Scott Paper Co., Chester, Pa. will head fund-raising drives in their respective industries on behalf of the world affairs education programs of the Foreign Policy Association.

Announcement was made by John W. Nason, president of the nonpartisan organization which is celebrating its 40th anniversary this month.

The FPA provides programs and materials for public study of U. S. foreign policy problems, including the nationwide discussion program known as "Great Decisions."

Jackson E. Spears of Burlington Industries is general chairman of the 40th anniversary campaign for support of the Association's $1,212,500 program. This is the largest fun-raising effort to date for the privately-supported Foreign Policy Association.

Abitibi Mill Appointments

E. W. McBride, vice-president, manufacturing, Abitibi Power & Paper Co., Ltd., announces the retirement of W. A. Plant, mill manager of Smooth Rock Fibre Division (Sulphite Pulp) effective December 1st, 1958, and the appointment of V. Oleskevich as mill manager and W. F. McKee, general superintendent, both appointments effetive on the same date.

Mr. Plant is retiring following 39 years of faithful service in which he held many positions in the company's manufacturing division at Smooth Rock Falls.

Mill Manager, Oleskevich was born in Odessa, Russia, and came to Canada with his parents in 1913. His early education was gained at Chatham, New Brunswick and later at McGill University from which he graduated with a Bachelor of Engineering (B. Eng.) Chemical in 1932. His first responsibilities in the Smooth Rock Fibre Division were in the mill and laboratory and in 1935 he was appointed Chief Chemist, and assistant manager in 1948. He is a member of the Technical Association of the Pulp & Paper Industry (TAPPI) and the Canadian Pulp — Paper Association (CPPA). He has served on the Sulphite Committee of the latter association.

General Superintendent, McKee, is a native of Toronto and graduated from Ontario Agricultural College with a BSA (Chemistry) in 1944. He became associated with Abitibi's Smooth Rock Fibre Division as assistant chemist in the same year; was appointed senior chemist in 1946; control superintendent in 1948 and pulp superintendent on October 1, 1953. Mr. McKee is a member of TAPPI and the CPPA.

Westvaco Services Available in Cleveland Area

West Virginia Pulp and Paper Co. has appointed Edward Noyes Cleveland area sales representative, it was announced by Albert L. Armitage, manager Commercial Printing Paper sales.

Mr. Armitage said that the appointment of Mr. Noyes will make it possible for customers and potential customers in the Cleveland area to make direct purchases of Westvaco printing papers more conveniently.

Appointment at Howard Smith

P. J. Robson has been appointed manager, Welfare Plans and Salary Administration, for Howard Smith Paper Mills Limited and subsidiary companies, effective immediately.

Cooper Retires From Fibre Company

Frank L. Cooper, of Wilmington, Del., retired from the Continental-Diamond Fibre Co. after 36 years.

He joined the Delaware Hard Fibre Co. in Marshallton in 1922 as a millhand, and when the company was absorbed by Continental in 1929 was in charge of all specialty production.

In 1950 he was appointed assistant general sales manager, and after the company was absorbed by the Budd Company was assistant to the general sales manager and the director of sales. Most recently he has been resident manager of the company's Spartanburg, S. C., plant.

Two Promotions At Mugler

Robert A. Clement, general manager and vice president of the Charles P. Mugler & Co., wholesale paper, announced the promotion of J. Paul Bralla to director of the industrial packaging and general paper division and of James J. Lichtenthal as director of the retail packaging and sales division. The Mugler firm recently moved into its new warehouse at 128 Perry St., Buffalo, N. Y., which provides improved facilities for materials handling and service.

Division Comptroller Named

Promotion of John I. Eisenman from accounting supervisor to division comptroller effective December 1 was announced by D. F. McCall, vice president and general manager of Simpson Paper Co., Everett, Washington. In his new position, Mr. Eisenman is responsible for accounting functions and cost and tabulating services of the paper manufacturing division as well as for coordination in the area of financial statistics and reports with the parent organization, Simpson Timber Co., in Seattle.

A member of the pulp and paper concern's cost and accounting department for nine years, Mr. Eisenman, except for four years navy service during the war, is a veteran of seventeen years with the company. His earlier years were spent in production assignments in the mill's converting department. He is a member of the National Association of Accountants and of the National Machine Accountants Association.

Gets New Position

L. C. Stevens, former director of purchases for Scott Paper Co., and vice president of its subsidiary, Delaware Pulp Co., has joined the Delaware Valley Paper Co., in Ardmore, Pa., as executive vice president.

Peter Borlew

Borlew to Celulosa de Chihuahua

Peter Borlew, formerly with National Container and Owens-Illinois has been appointed assistant to the mill manager, Dr. L. J. Rys, of Celulosa de Chihuahua S.A. in Mexico. He will be in charge of production, cost reduction, quality and training of supervisory personnel. He is also very active in TAPPI being now the chairman of the Chemical Products Committee and of the Subcommittee for the Chemistry of the Sulphate Cook of the Alkaline Pulping Committee.

Riegel Advances Staff at N. J. Mills

Riegel Paper Corp., has announced the advancement of John J. Steinbinder from superintendent of Warren Mill to superintendent of the converting department at Milford Mill.

Thomas H. Rutt, formerly quality control supervisor, succeeds Mr. Steinbinder at Warren Mill.

Richard W. Flores, who has been assistant quality control supervisor under Mr. Rutt, has been named quality control supervisor.

William H. Holl, formerly production manager, Victoria Paper Mills, has joined Riegel in the newly created position of assistant to Alan Schenck, manager of Riegel's Warren, Hughesville and Riegelsville mills.

Wolfgang O. Wilfert, formerly with General Tire & Rubber Co., has also joined Riegel as coating department superintendent at the Milford Mill.

Campbell Receives Award

Roy L. Campbell, secretary of Canadian International Paper Co., is the recipient for 1958 of the national distinguished professional service award from the Chartered Institute of Secretaries of Canada according to an announcement made by Dr. James C. Bonar, national chairman of the Institute and assistant secretary of the Canadian Pacific Railways.

Mr. Campbell, a graduate in arts and in forestry of the University of Toronto, he has been associated with the pulp and paper industry since 1914, when he was editor of the Pulp and Paper Magazine of Canada. He joined The Riordon Pulp and Paper Co. in 1917, following two years of service with the Canadian Manufacturers' Assn. as Montreal secretary. He has been with Canadian International Paper Co. since 1925 when that company bought out Riordon. He has been secretary of C.I.P. since 1931.

Baron Resigns Consolidated Successor Named

Clement Q. Baron, president and general manager of Consolidated Paper Co., announced his retirement effective December 31, 1958, in accordance with the Company's retirement plan. He will be succeeded on January 1, 1959, as president and general manager by C. H. R. Johnson, who at the present time is vice president in charge of manufacturing.

Ralph Kingsbury Succumbs

Ralph M. Kingsbury, 56, research chemist at the U. S. Forest Products Laboratory, died November 27 at Madison, Wis., from a heart ailment. Mr. Kingsbury joined the Laboratory's Pulp and Paper division in 1943 and was responsible for much of the work in pulp bleaching and purification and in the development of new and improved bleaching processes—especially those for groundwood, semichemical, and other high-yield pulps from hardwoods.

A member of TAPPI and the American Chemical Society, he was the author of numerous publications in the field of bleaching pulps for papermaking and chemical derivatives.

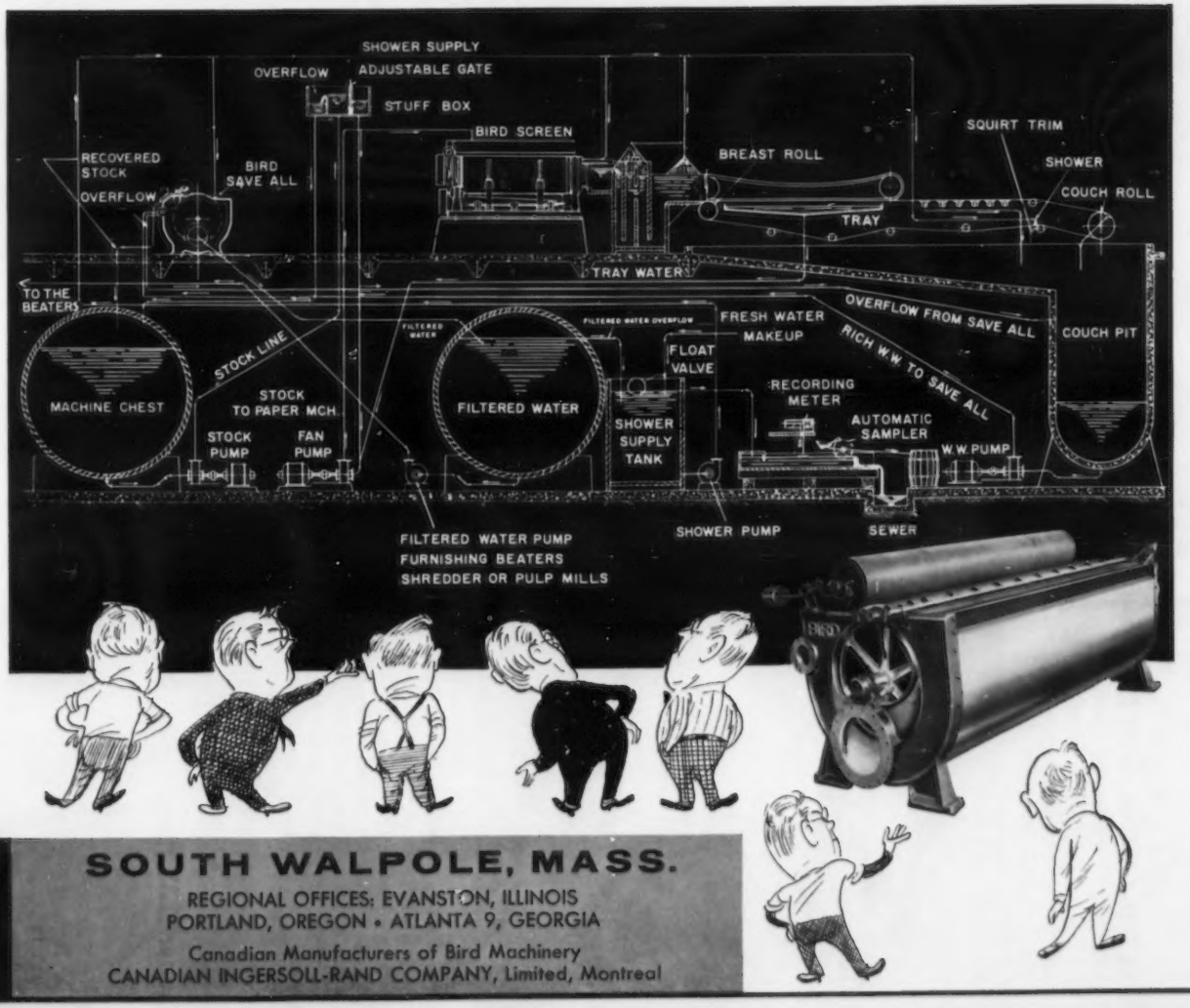
R. M. Kingsbury

LOOK AT THIS typical BIRD SAVE-ALL Stock Recovery System

Every gallon of white water from the tray, the squirt trim, the showers and the couch pit goes to the Bird Save-All. The stock goes right back to the machine chest — stock that has already put through all that expensive preparation and is all ready to be made into good, salable paper. The filtered water goes to beaters, shredders, broke reducing units, pulp mill or what have you.

Here is a sure, easy inexpensive way to make money — good, *paper* money.

Let us make recommendations and savings estimates for you.



BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

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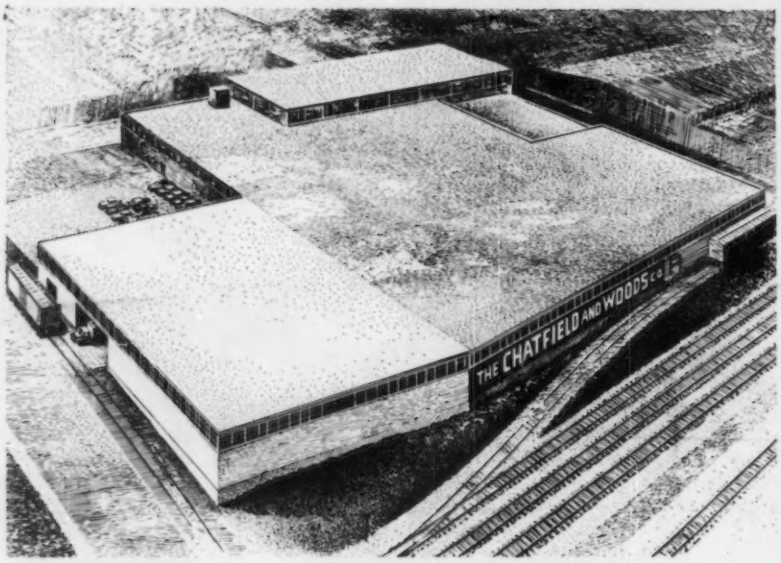
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal



The Chatfield & Woods Co., of Pittsburgh, Pennsylvania, this fall broke ground for a new $200,000 addition to the firm's warehouse of offices.

The new addition will increase the company's storage facilities by one-third. The most up-to-date procedures in the paper warehousing will be used throughout the operation, this company being generally considered a pioneer in the development of modern paper warehousing. Electric fork trucks operating in seven-foot aisles move shipments into and out of storage. Careful layout and an extensive steel racking installation will enable the company to achieve a stacking height in excess of fourteen-feet.

Economical Freight Car Doorway Protection

Freight car doorway retaining strips are now available in 100 lb. kraft paper, and in asphalt fiberglass laminated paper for products that are unusually difficult to retain. These strips are furnished as one piece ready for installation on off-doors or they can be cut in two after nailing and held back out of the way for easy loading or through-car loading . . . can then be quickly retensioned and sealed from the outside after the car is loaded. They come in sizes to accommodate 6 foot to 10 foot doors.

Solid doorway loading of cartons, bags, boxes and other packaged products is now possible without damage. The steel strapping, running the entire length of the strip, reinforces the heavy paper keeping the containers away from the doors. No longer must shippers rely on heavy wooden doorway barricades. Retaining strips reduce dunnage by 20 to 40 pounds . . . another savings. Because retaining strips are always taut across the doorway they prevent jamming of the load against sliding doors.

Retaining strips come packed 50 and 25 to a roll having a diameter of less than 6 inches thus requiring minimum storage space. They are readily handled by one man. For further information write Signode Steel Strapping Co., 2600 North Western Avenue, Chicago 47, Ill.

Judges for 1959 Fiber Box Competition Announced

Charles H. Carpenter, vice-president, Kieckhefer-Eddy Division, Weyerhaeuser Timber Co., and president of the Fibre Box Assn. has announced the appointment of twelve judges for the 1959 fiber box competition.

For the first time since the competition began in 1953 two panels of judges have been selected. An Industrial Panel will judge the protective qualities of corrugated and solid fiber shipping containers entered in the competition and a Merchandising Panel will pick the winners from a sales point of view. Judges named to the Industrial Panel are Lloyd Stouffer, Editor of Modern Packaging; N. F. Behme, Jr., chairman, National Classification Committee, Washington, D. C.; Allyn Beardsell, president, Container Laboratories, Inc.; Charles A. Lewis, director, Containers and Packaging Division, U. S. Department of Commerce; L. B. Ghastin, Packaging and Research Department, Chevrolet Motors, and Vince Goubeau, vice president, Radio Corporation of America.

The Merchandising Panel consists of S. R. Bernstein, editorial director, Advertising Age; O. H. Stark, president, Point of Purchase Institute; Harold McNulty, Batten, Barton, Durstine, & Osborn, Inc.; Myron J. Aubineau, vice president, Quaker Oats Co.; T. E. Sweeney, Montgomery Ward & Co., and Raymond Loewy, Raymond Loewy Associates.

Annual Meeting of The Gummed Industries Assn. Inc.

At the annual meeting of the Gummed Industries Association, Inc., held at the Greenbrier, White Sulphur Springs, West Virginia. R. T. Meyer, president of Tape, Inc., Green Bay, Wisc., was re-elected for his second term as president. S. E. Thompson, vice-president of Central Paper Co., Menasha, Wisc. was chosen vice-president. Embarking upon his twenty-second year of service to The Gummed Industries Association, Inc., Philip O. Deitsch was re-elected to the post of managing director.

In addition to President Meyer and Vice-President Thompson, the following were elected to the Association's board of directors:

A. W. Aron of Hudson Pulp and Paper Corp.
E. F. Herrlinger, II of The Gummed Products Co.
Henry W. Stark, Jr., of Rexford Paper Co.
A. J. Thiel of Ludlow Papers, Inc.
W. G. Bretson of Mid-States Gummed Paper Div., Minnesota Mining & Mfg. Co.
J. A. Shartle of Brown-Bridge Mills, Inc.
William L. Shattuck of Adhesive Products, Inc.

International Plans Milk Carton Factory

International Paper Co. of New York will build a $500,000 plant at Versailles, Ky.

The firm will begin construction next spring. It will produce milk cartons.

Stone Container Appoints Cooley

The appointment of Kenneth G. Cooley as field sales manager has been announced by Stone Container Corp., W. C. Ritchie Division, Chicago. In the newly created position, he will assist the division's sales representatives throughout the country.

Mr. Cooley was sales manager of S. K. Smith Co., Chicago packaging firm, where he served in various executive capacities for 26 years.

He has extensive experience in gift package merchandising, a field especially important to W. C. Ritchie with its wide range of special-design packages.

Strike Ends At Sturgis Plant

The longest strike in Sturgis' history ended yesterday when representatives of the National Carbon Coated Paper Co. and Local 1032 of the United Paper Makers and Paper Workers Union (AFL-CIO) agreed to contract terms.

The contract agreement, reached Nov. 18, and worked out in detail Nov. 19, ended negotiations that started Aug. 6. Union employes set up picket lines Sept. 10 and the strike was in progress for 71 days.

The company said it would not recall all of the 314 idled workers immediately because business orders must be resummed before full production can be started.

The new contract provided for five-cent hourly pay increases with a six-cent hourly increase added Oct. 1, 1959, four weeks vacation for employes with 25 or more years service and improved insurance benefits.

O-I Transfers Schmidt To N.Y. Office

Lloyd G. Schmidt, supervisor of corrugated carton operations at Owens-Illinois Glass Co.'s Charleston, W. Va., plant since 1954, has been transferred to the company's New York glass container sales office, Sid F. Davis, vice president and general sales manager, announced.

Mr. Schmidt joined Owens-Illinois in 1941 and served in the cost accounting and industrial engineering departments at Alton, Ill., and Toledo, Ohio, before going to Charleston. He served as senior industrial engineer at the West Virginia plant from 1950 to 1952, and after two years at O-I's home office in Toledo, returned to Charleston in 1954.

OBITUARIES

Charles Montague Prescott, 73, vice-president of the A. E. Long and Co. Ltd., printers and paper box manufacturers, died at the Toronto East General hospital.

He was born and educated in Toronto and had been with A. E. Long since his early teens. He started as a printer, became a skilled designer and advanced to become general manager and vice-president of the company. He was president of the Canadian Paper Box Manufacturers Association during the early 1930's.

J. Norman McDowell, 66, retired general manager of the Pennsylvania Paper So., Coatesville, Pa., died Nov. 26 at his home in West Grove, Pa.

William Howard Enell, 65, director of advertising and public relations for the Peterson Parchment Paper Co., Bristol, Pa., died Nov. 26 in Jefferson Hospital, Philadelphia, Pa. He was a member of the American Management Association.

If it takes 7.05 milligrams of Bond Blue B to match a blue on laboratory sheets weighing 3 grams, how many pounds of dye per ton would you call for, to produce the same shade in the mill?

Warning: A simple transposal to equivalent pounds of dyestuff per ton of stock will give the wrong answer.

For a technical article discussing the problem of adjusting a laboratory dye formula to meet requirements of the individual mill, drop us a line. It is the latest Sandoz publication, designed to increase the industry's understanding of color and its application to pulp and paper.

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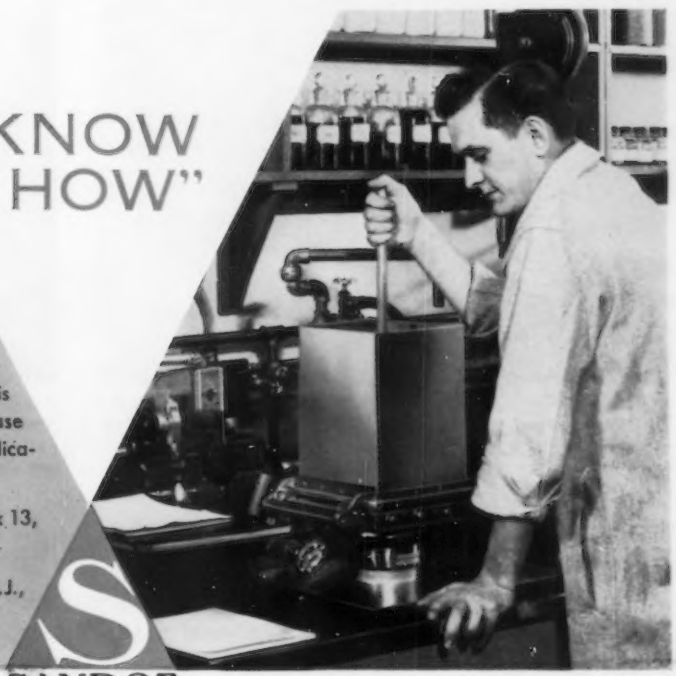

SANDOZ

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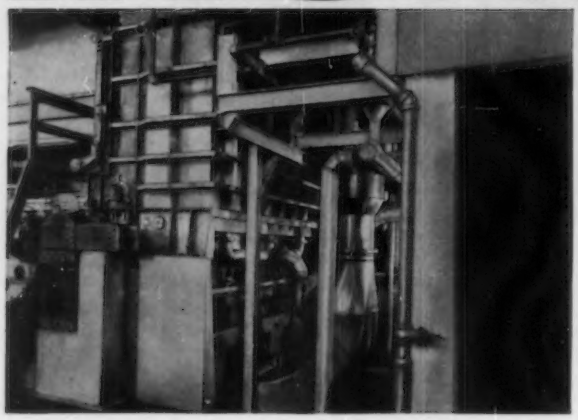
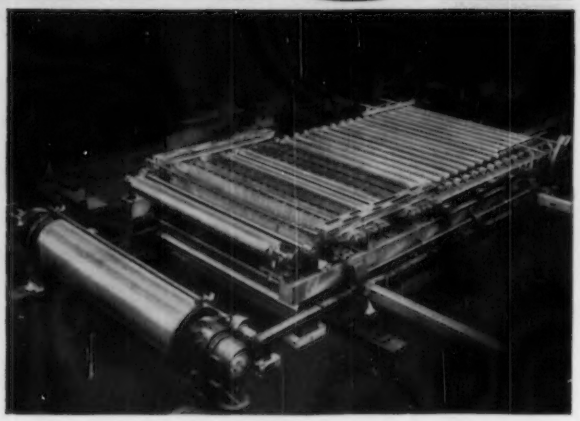
THINKS AHEAD WITH PAPER

SANDOZ

INCREASE

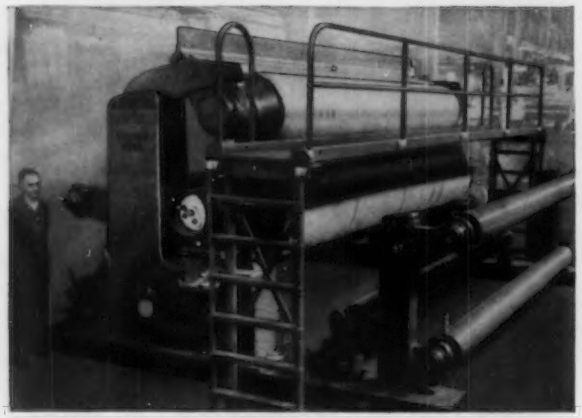


FLOW CONTROL UNIT with multiple manifold distributor and recirculation. This unit gives improved uniformity of delivery into the pond, and together with the specially designed slice gives the optimum in uniform profile, all this at stepped-up speeds.

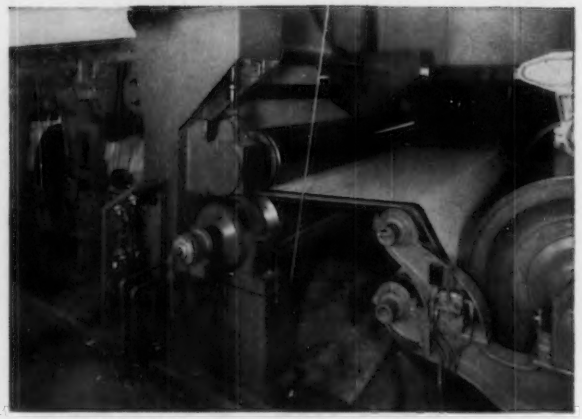


FOURDRINIER. The Sandy Hill removable fourdrinier permits varying components for making the entire range of fine papers. Structurally strong, simple in design, it requires least man-power motion and involves least hazard to wire during wire changes.

IMPROVE



SUCTION PRESSES — Hydraulically operated suction presses are available designed for pressures up to 1,000 pounds per linear inch of nip.



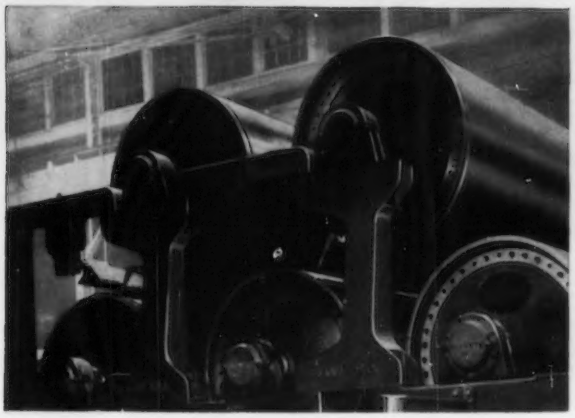
BREAKER STACKS — Properly located in the dryer section, this Breaker Stack insures best results in compacting the sheet and final fiber migration control. Designed for high nip pressures, it operates successfully on high grade printings.

Replace obsolete equipment with Sandy Hill specialties

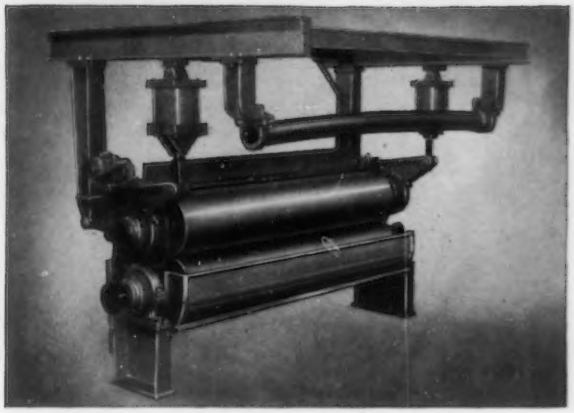
In many mills throughout the country Sandy Hill components are replacing obsolescent equipment at critical points in paper machines. Specially designed and engineered for efficient operation, this Sandy Hill equipment has resulted in increased speeds and improved quality of product.

Shown here are a few of the Sandy Hill specialities, adaptable to existing machines. Let us tell you more about them. At your invitation, a Sandy Hill Sales Engineer will visit your plant and offer a sound plan for machine improvements to keep your mill abreast of the increasingly competitive market.

OUTPUT



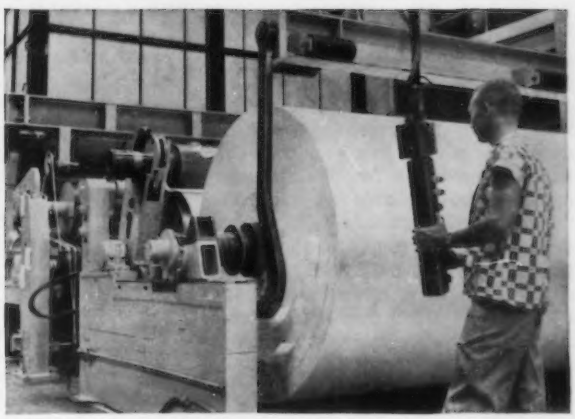
DRYERS — The Dryer Section, often the bottleneck in a modernized paper machine, is no problem when an additional nest of Sandy Hill Dryers is installed. Sandy Hill's pressure tested Dryers have more capacity per unit, so that a smaller number of Dryers meets the requirements for speeded-up production.



SIZE PRESSES — Installed on existing machines by moving dryers, these Size Presses give improved performance in sizing or pre-coating high grade papers. Overhead loading and rolls that withstand chemical action are features.

QUALITY

SELECTIVE DRIVE — Increased range and control of draw, economy of space and maintenance, and unvarying draw between sections are recognized features of the Sandy Hill Selective Drive.



REELS — Sandy Hill offers lightweight Reels for tissues, etc.; standard Pope type Reels for most types of paper; and hydraulically controlled heavy Reels for board or heavy pulp.

IMPORTANT: The first sections of our Centennial Catalog are now coming off the press. Write us now for your copies.

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Progress Report on the Outside Storage of Southern Pine Chips

This common practice in the West is under active investigation in the South chiefly to determine effect of climate.

J. A. Holekamp,
Forest Engineer,
American Pulpwood Ass'n.

Keen interest in the outside storage of chips is being shown in the south. Two groups of American Pulpwood Ass'n. Technical Committee members are studying the possibilities from different viewpoints.

The *first* group is made up of men whose mills are receiving substantial quantities of purchased chips. Their interest runs high. To them this development offers promise as a practical way to provide a surge point between sources of chip supply and mill consumption. Also, mill storage of purchased chips may enable the successful operation of a full mill shift on chips from this source, thereby eliminating one shift of the mill woodyard and woodroom system. For some mills this can result in sizeable operating savings.

The *second* group is made up of men now being asked to help in the planning of new mills or in the improvement of existing plants. Seemingly, it is their hope that outside chip storage may yield a cost per cord savings in wood deterioration, mill woodyard and woodroom operation, and utilization of plant site acreage for wood storage. Even if this new wood storage concept proves practical for the South, one should recognize, however, that these men feel deliveries at the mill will still continue to be in pulpwood form. It will principally be a case of unloading trucks and rail cars upon arrival, barking and chipping, and then storing in chip rather than roundwood form.

Photos courtesy of American Pulpwood Assn.

Outside chip storage in the South is at a point of beginning. Many questions are yet to be answered. It is the purpose of this Technical Release to pass on information about known work currently going on in this field, and to point out some of the initial thinking which comes from men doing the work.

Four Vital Problems

Questions about the following seem presently foremost in the minds of Southern Technical Committee Members. *First*, wood deterioration in outside storage; *second*, chip contamination; *third*, types of handling equipment and the cost of handling chips to and from storage; *fourth*, the storage volumes per acre for chips as compared with other techniques of storing wood fibre in the roundwood form.

The first step in answering these vital questions is to gain information from mills on the West Coast where outside chip storage has been carried out for more than 6 years by some mills, and where this storage technique is now gaining widespread acceptance among paper mill operators. Some information from the West Coast has already been collected. (See "Storage of Chips in Outside Piles" by J. S. Hensel, A.P.A. Technical Release No. 331, published in March 24, 1958 issue of *Paper Trade Journal.*)

More data is being collected and will be released in future progress reports on this subject.

Wood Deterioration

Based on the thinking that conditions to be found within a pile of pine sawdust will likewise hold true for a pile of pine chips, a substantial number of sawdust piles in the South have been checked — these piles ranging in age from 2 to 15 years. Examination of these piles revealed that the outside layer of sawdust (ranging in thickness from 6 to 18 inches, depending upon the age of the pile) showed signs of deterioration, but the fibre beneath this layer was as good as the day it was laid down. These examinations provided a degree of optimism and perhaps helped stimulate interest for carrying out some of the following testings:

St. Marys, Georgia: In March, 1958 at St. Marys Kraft Corp., one carload of purchased pine chips (17 chip units) was rejected because of high bark content and, therefore, dumped in the mill woodyard as a sample for testing. For each month thereafter two basket cooks were made in the mill's digester, one consisting of stored chips and the other of regular mill production chips. Following are the test results:

One Month Storage

	Pulp Yield	Rejects	$KMnO_4$ Number
Stored chips	48.6%	2.5%	24.7%
Mill chips	48.9%	4.9%	24.7%

Comments: Neither the beater curves nor the test data show any significant difference in either pulps.

(Left) Test pile (17 unit) at St. Marys Kraft Corp., St. Marys, Ga.

(Below) 400 unit chip storage pile at East Texas Pulp & Paper Co.

Two Months Storage

	Pulp Yield	Rejects	$KMnO_4$ Number
Stored chips	49.7%	1.2%	18.7%
Mill chips	42.5%	1.3%	19.4%
Fresh purchased chips	43.0%	0.3%	17.4%

Comments: The stored chips appear equal in strength development to the regular mill chips cooked at the same time.

Three Months Storage

	Pulp Yield	Rejects	$KMnO_4$ Number
Stored chips	46%	1.0%	27.5%
Mill chips	54%	2.4%	30.0%

Comments: The stored chips appear equal in strength development to the mill chips cooked at the same time.

Four Months Storage

No tabulated data

Comments: The beater curves indicated for the first time since monthly basket cooks began, that the stored chips are inferior in quality to regular chips. Both mullen and tear strength have declined significantly. It appears that purchased chips can be safely stored in this manner for a little more than three months without strength loss.

This test data seems to indicate that chips produced from timber cut while the tree is still in the dormant stage were satisfactorily stored outside during the Spring months of April and May, and the Summer month of June. After 90 days in storage, chips produced pulp comparable in quality to pulp made from June "mill production chips." During the fourth month in storage, however, a noticeable drop in pulping quality begins.

Visual examination of chip samples taken after four months revealed bright, dry chips in the outer ½-inch layer; stained chips with signs of mold and high moisture content in the next ½-inch to 1 foot strata; reduced stain signs and lower moisture content in the 1 to 2 foot layer; and near bright chips in the 2 to 3 foot layer.

Evandale, Texas: At East Texas Pulp & Paper Co., two million lbs. of purchased pine chips or 400 chip units were stored on a macadam slab beginning June 12th, 1958. Chips were contained by a 15-foot rack of roundwood piled on each of four sides, except for an opening through which dump trucks travel when storing and reclaiming chips. Depth of pile is approximately 15 feet.

The writer viewed this pile almost two months after the chips were laid down. There were no visible signs of blue stain or deterioration of any kind. Samples taken from a hole dug 18 inches deep in the top of pile and one dug into the vertical side of pile at a 6-foot height mark displayed bright and clean chips like all outer visible parts of the pile. Appearance of chips in every respect was excellent.

It was noted, however, that heavy rains had dampened the top layer of the pile and moisture content was high. The temperature of chips at an 18-inch depth were almost too warm to handle. Readings taken from the thermometer shown in Figure 4 indicates maximum temperature readings of 141°. The temperature is normally around 120°. Each temperature bulb rests 10 feet below top of chip pile. Chips taken from a hole dug into the vertical side of the pile at a 6-foot height mark were cool and dry to the touch.

Experience to date with the chip pile leads one to conclude that chips can remain in good condition when stored during the Summer months of June, July, and August under conditions which existed in this area during the time of testing.

Chip Contamination

Information available to the writer on this subject is now scant and needs collecting. One West Coast mill does report using a water washing system on chips recovered from outside storage.

A 50-ton chip pile studied in 1952, by West Virginia Pulp and Paper Co., reveals "fly ash, dirt, and bark settled on the chip pile in sufficient quantity to be noticeable in the pulp." (Reference: Minutes of APA Southeastern Technical Committee Meeting, November 20 and 21, 1957, Jacksonville, Florida.)

Information on the quantities of chip contamination material around a specific pulp mill may well be readily available or can be collected quite easily.

Handling Equipment and Operating Costs

Information on chip handling equipment and operating costs for outside chip storage requires more time spent in collecting available information, estimating costs, and evaluating the results of findings. Known and readily available sources of collected information are as follows: Minutes of A.P.A. Southeastern Technical Meeting, November 20 and 21, 1957; The 1958 September issue of "Pulp & Paper

(Left) Chip samples taken from various depths in pile.

(Below) Thermometer for recording temperature inside the pile.

Magazine" page 129; A.P.A. Equipment Handbook Release No. 331 (Paper Trade Journal, March 24, 1958).

Storage Volumes

Table I shows volume-acreage storage ratios which now exist at some mill woodyards:

Several additional mills in the South are now making plans to conduct tests which should provide additional information on wood deterioration in outside chip storage. They are seeking information about the changes which take place within piles of green pine chips put down during each of the four seasons of the year. With more Southern mills joining in the testing and investigation, some very worthwhile progress in reducing wood costs may result.

To more accurately calculate whether or not outside chip storage in the South will yield a cost per cord savings, each interested mill will do well to first assemble up-to-date information about wood deterioration in storage, cost of handling, and volumes of wood per acre of yard storage, as applies to their existing mill woodyard systems.

From American Pulpwood Ass'n Technical Release No. 58-R26.

TABLE I—Storage Volume and Areas

Kind of Storage	Total Cords	Pile Space Acres	Volume-Acreage Ratio Cds/Acre
South—Water Storage of Sticks			
Circular Pond	30,000	4.3	6,970
Circular Pond	25,000	3.68	6,800
South—Jackstraw Stick Storage			
20-ft. containing wall of ricked wood; 30-ft. peak pile height	13,130	2.50	5,250
No ricked containing walls; 35-ft. peak pile height	40,000	9.26	4,320
South—Ricked Stick Storage			
20-ft. average pile height	2,700	.73	3,700
Truckwood ricked with gantry crane—40 ft. average pile height	26,100	2.49	10,500
Chip pile (estimated ±50)	113,000	11.6	9,740
Chip pile (estimated ±50)	25,000	3	8,333
Chip pile (24.5 ft. av. hgt.)	47,000	9	5,222

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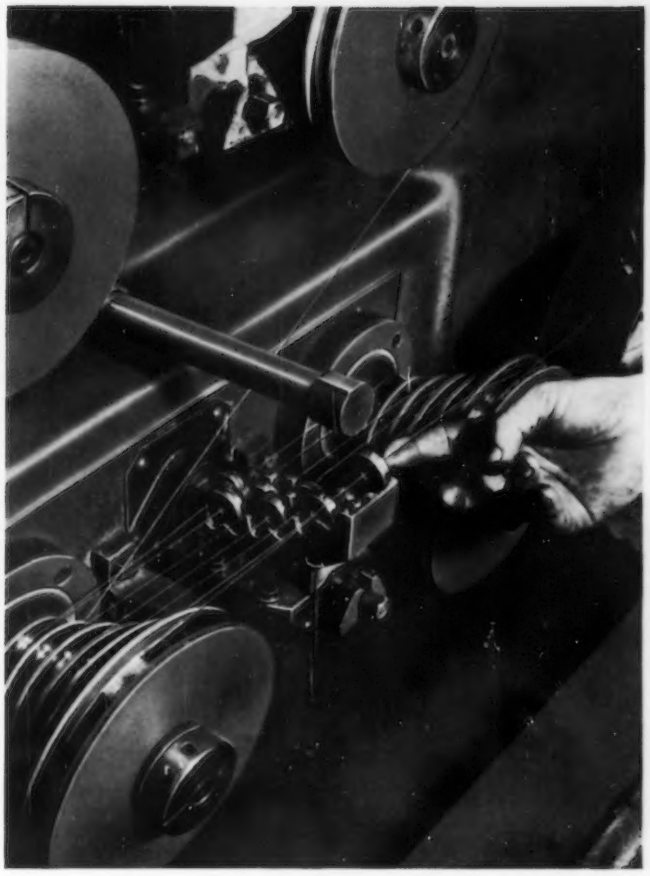

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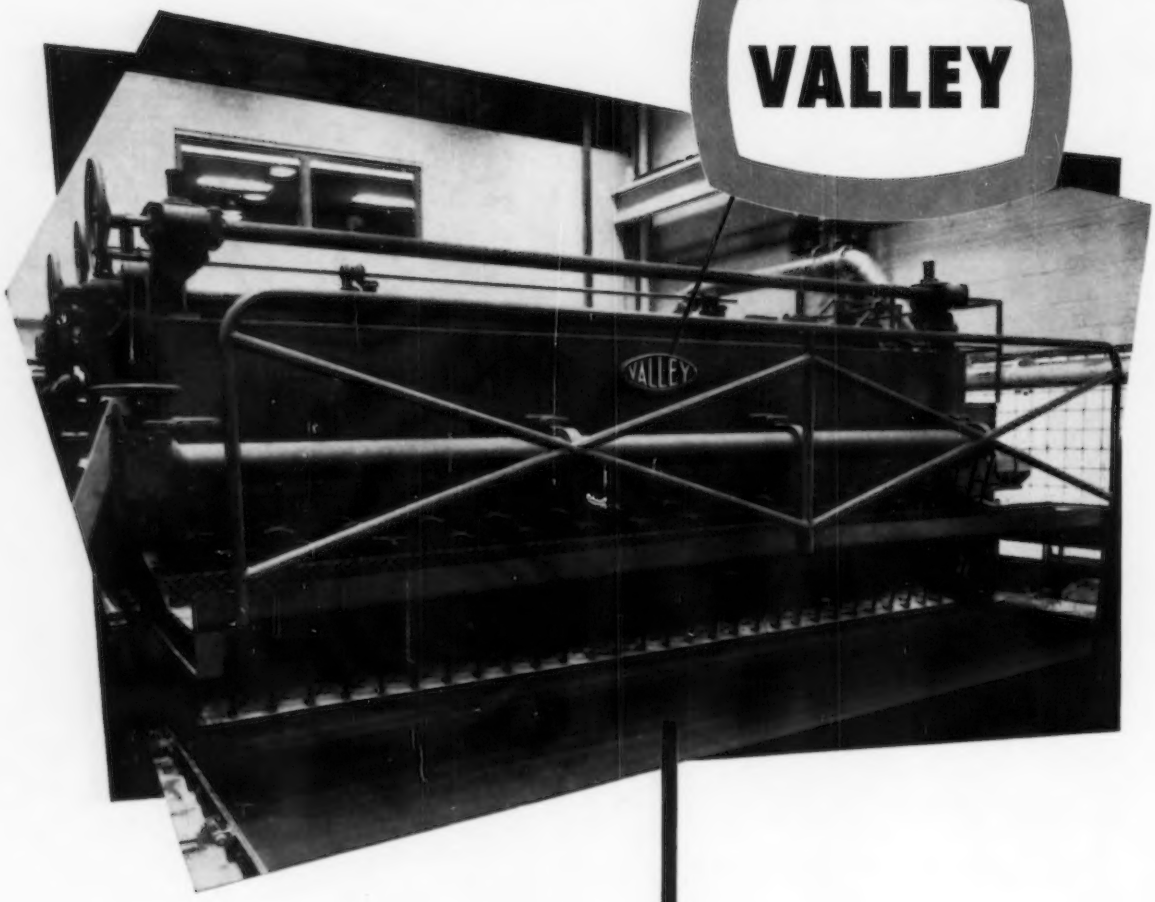

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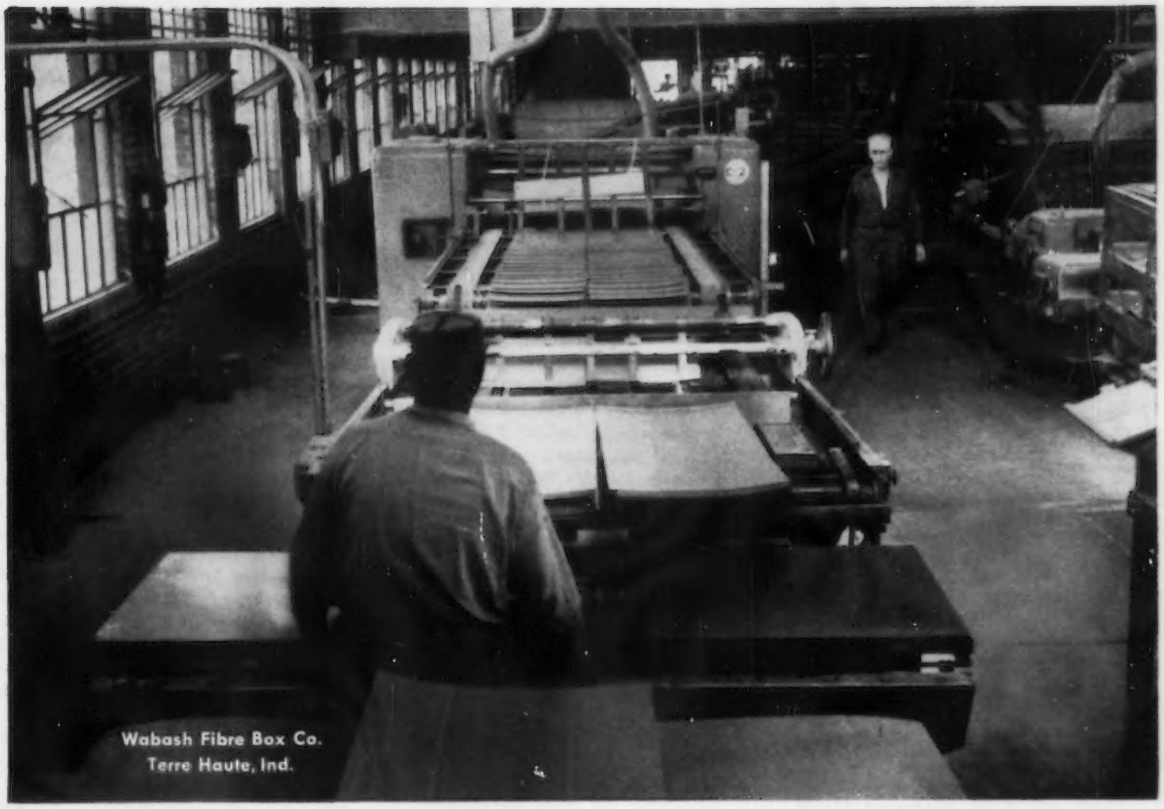

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How the Sheet is Laid on the Wire

A practical discussion of fourdrinier operation for everyone interested in papermaking.

Edwin J. Cole

Laying the sheet on the wire is the most important of the abilities and duties of the practical papermaker. Much has been practised on this subject but very little written. This is partly because much of the practical lore accumulated by papermakers is largely of an empirical nature and has not been connected by the veins of theory. A connected explanation which at times may be dignified by the name of "theory" does however underlie and interconnect this practical knowledge. If this basic interconnection is once grasped then it is possible to train the machine help more readily and to make adjustments at the wet end with a surer hand.

These topics have been discussed to a varying extent in references (1) to (3), the relevant parts of which may be read in conjunction with the present article.

General Principles

In this section what exactly one needs on the wire will be discussed followed by a brief account of the methods of judging what exactly the situation on the wire may be. The following sections are then devoted to analysing and describing how the observations made may be translated to the desired end result.

With the exception of certain specialty papers that will be discussed later, what is needed on the wire is a uniform distribution of flow of both the large and small fibers. This will give a homogeneous sheet of the maximum wet web strength and thus the best running of the machine and the most uniform dry paper. The paper must be free from blemishes; in the wet state these, e.g. air bubbles, will cause wet end breaks and in the dry state calender cuts and weak spots in the paper.

Over the years the practised papermaker has learned how to use the following methods to guide him as to the uniformity of the sheet on the wire:

1 Observing the flow at the slice by eye.

2 Following the sheet down, by moving the eye from after the slice to the boxes, while standing on the headbox.

3 Following the sheet down by moving the eye from after the slice to just before the boxes standing at the boxes on the side of the machine or on the walkway at the boxes.

4 Examine the dry line at the boxes both from just above wire level at the side and from the walkway at the headbox.

5 Taking note of the amount and variation of vacuum at flat boxes and couch.

6 The levelness and steadiness of the separation line as the paper leaves the couch.

7 Noting the draw necessary to detach the paper but at the same time preventing the paper running to the pit, and the changes in draw that occur.

8 Obtaining the basis weight.

9 Knowing the headbox consistency and level.

10 The look through the finished sheet.

11 Utilizing beta gauge profiles across the machine with traversing beta gauges of composite profiles with off-machine beta gauge profiles.

12 Utilizing length direction beta gauge profiles made on single sheets.

Principal Variables

Before continuing with specific points for machine operation, as far as the laying of the sheet on the wire is concerned, it is advisable to discuss briefly a few of the terms that are used and the variables encountered. These general points are presented below.

Headboxes. The function of the headbox is to spread the dilute stock evenly across the machine width and to deliver it, uniformly dispersed and at a steady rate, on to the wire with the minimum possible disturbance. The manipulation of the slice is considered as part of the present treatment but not the construction faults and advantages of different headbox types since this is not a part of operating the machine.

Special Table Rolls. Grooved rolls and dandy type table rolls disturb the stock less than solid rolls and for this reason are often used on the early part of the wire where the wire length is sufficient to allow this.

Dandy type or wire mesh rolls are used at the positions immediately following the breast roll on many tissue machines for the same reason. They also have the effect of causing the consistency of the water through the wire to be much lower and with thin papers this is an advantage.

Fiber Alignment. When pressure formation is used to align fibers using the ordinary type of slices then an alignment of fibers is only obtained on the layers adjacent to the wire. This is also the case where the alignment is obtained by projecting the jet on to the wire at less than wire speed. If, however alignment is obtained with an upward sloping wire from the slice it extends through the depth of the sheet.

Fiber Length. Short fibers, as is well known, form better on the wire than long fibers. Thus as a stock is progressively beaten or refined by shortening, it forms more easily, although if "hydrated" to any extent, it will drain slower. In the same way, for example, an admixture of birch kraft with long fibered softwood pulp will result in a much improved formation and for the same reason some tissues contain bleached groundwood of a fine fiber size.

Shake. The use of shake improves formation. The shake is however a time dependent variable. If the time for which shake is allowed to act is too short, the effect is negligible. Because of this, shake is ineffective at speeds of more than 800-900 f.p.m. even for long wires.

If the shake is too violent then the fibers are disturbed instead of settling uniformly. The action of shake is always to retard drainage. Shake can also affect the distribution of fibers and tends to bring the long fibers to the wire side of the sheet with the short ones at the top. Where deckle strips of any length are fitted, a long throw and violent shake will cause the edge of the web to be lighter than the middle.

Two Sidedness of the Sheet. Strong suction from the table rolls can move the short fibers relative to the long fibers within the sheet. The flooding or

loosening effect of the water pushed up through the wire on the upstream side of the rolls is a contributory cause of two sidedness.

The result is that the top side of the sheet is liable to be smoother and with a closer formation than the wire or underside and there is often with a mixed furnish an uneven distribution.

Wires. The thinner the sheet the finer the wire mesh wanted. Mesh might be about 65/60 for slow speed machines for banks and bond and for light cigarette papers may be up to 100.

With triple warp wires the drainage is retarded or as the papermaker puts it "the stuff does not work so free."

For newsprint, wires at the present time are about 65/56 at the higher speeds. The finer wires have a slower drainage but are necessary to permit an easy removal of the paper from the couch. On old machines with short wires that have been speeded up, the finer wires that have been introduced have resulted in the raising of headbox consistency due to retarding of drainage whereas it has been found that had the previous and coarser wires been maintained on the machine that the additional drainage required could be obtained without difficulty by the increased water removal capacity of the table rolls at higher speeds.

Heating the Stock. One method of obtaining increased drainage that has been used for many years on greaseproof machines and has now spread to news machines operating at high speeds with short wires (and insufficiently closed white water systems) is to heat the stock. For greaseproof, temperatures of 90 to 100 degrees F. are common, for newsprint 120 to 130 degrees F. In addition to the increased drainage obtained through the viscosity effect, the fibers when heated tend to swell and become more rigid.

Degree of Closure of System. The more closed the system the greater the amount of fines circulating and thus the higher the headbox consistency will be. This fact must be borne in mind when judging machine condition. The build up in the completely closed system must also be allowed for when starting up on fresh water.

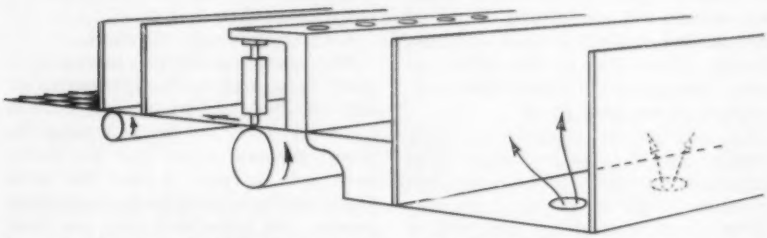

Figure 1. Double straight slice as used on old slow fine paper machines up to 300 f.p.m.

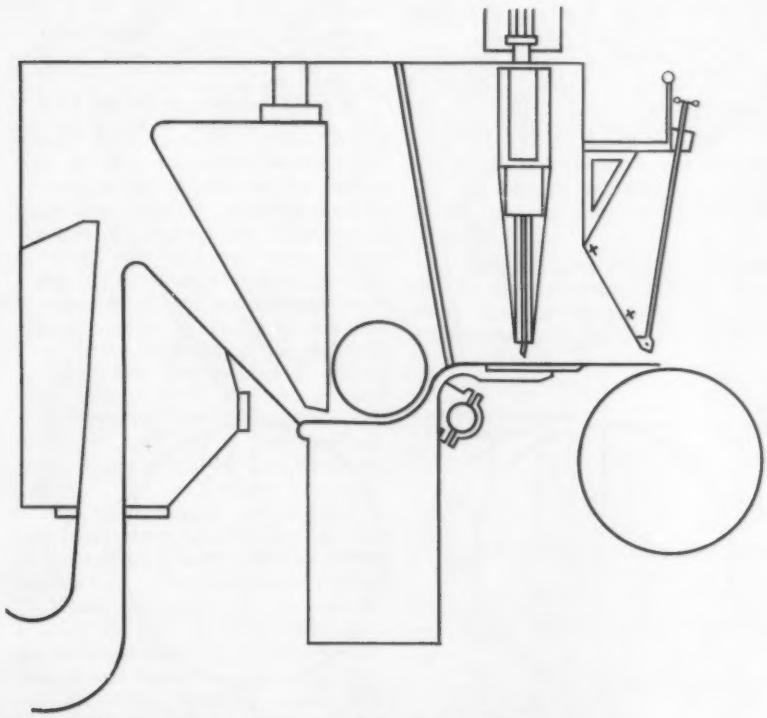

Figure 2. Projection type slice for machine up to 600 f.p.m.

Operation of Slow Paper Machines

Much has been written about the difficulties of operating high speed paper machines but little is available about the similar and different difficulties that can confront the operator of a low speed machine.

Slow or "Fine" paper machines of the type considered here are usually fitted with one or the other of the types of slices shown in Figures 1 and 2.

The sheet is actually formed, at these low speeds, a short distance from the slice itself. To form a sheet on such a wire the speed and the amount of water must be consistent with the settling time of the fibers.

With slow stock the difficulty of obtaining a satisfactorily formed sheet on the wire is to extract enough water on the wire while at the same time putting in enough water to make the sheet. When water is shut off (usually on such machines, at a mixing box) the stock is too inert and greasy to shake together properly when it reaches the wire, and the consistency may be too high to take the stock through the screens. When the amount of water put on is sufficient to give easy screen operation and make the sheet on the wire, the sheet may be too wet at the dandy roll and couch. In a case such as that described above there are only three remedies; to reduce speed; to reduce shake which while, possibly affecting the formation, in itself will increase drainage; or to heat the stock by introduction of steam to the white water tank or other suitable place.

If the stock is allowed to rush on to the wire at low machine speeds, it will run in a turbulent state some way up the wire and past the maximum influence of the shake before settling down sufficiently for the shake to form the sheet. Thus the effect of shake will be largely lost and the sheet will be cloudy instead of close.

If there is too little water in the sheet, small scale shifting will occur on the wire due to lack of carrying medium, and closeness and sheet strength will suffer. If there is too much water, the small fibers will still be in suspension when the suction boxes are reached and the extra suction needed

will disturb the whole fabric of the sheet.

On slow machines, if the slice is too far down, it gives the appearance of slow stock bringing the dry line forward and results in a grainy sheet; ripples are formed and in extreme cases these will show in the dry paper. If the slice is too far up, then a cloudy sheet usually results because the speed at which the stock is fed to the wire is too low, unless the amount of water is such that it is usually higher than the machine can drain.

In a well fibrillated sheet one of the controlling factors is the way in which the fibers flow out under the slice: the passage under the slice tends to deflect the fibers from their original angle of flow. Thus a free stock, or a stock run with plenty of water in it, will tend to move more machine direction aligned than a slow stock run with less water.

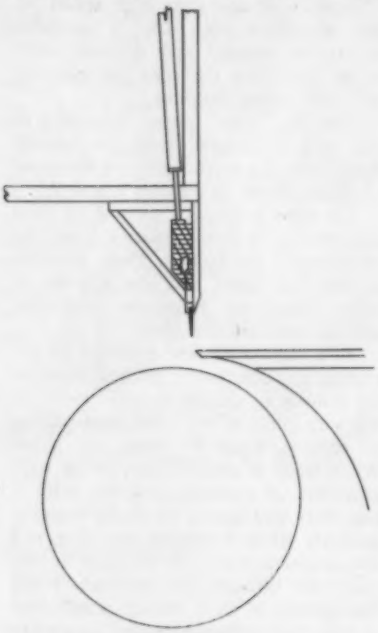

Figure 3. Vertical bar type slice.

On a machine running at low speeds and fitted with shake, a homogeneous sheet results as the shake is acting for a long time while the stock is still fluid enough for it to have effect. In a mill with diverse old machines therefore, part of the skill in laying the sheet on the wire is to correctly apportion the various grades to the different machines.

A cloudy looking paper is made from long fibered relatively unbeaten stock with a deep dam behind the slices (head higher than the theoretical value). The stock rushes up the wire and little shake is used. This treatment gives a cloudy watermark as the surface is not smooth enough for a good impression.

In cases where the amount of water is too great for the forming length of the machine or there is too little shake, "water drills," that is thin streaks of water running on the wire without mixing with fibers, may result.

In addition to formation defects, flocs on the wire can be caused either from lumps coming from the headbox or by an irregular delivery edge of a rubber apron when this is used with an old type slow speed headbox as in Figure 1. This occurs when the material of the apron is too hard and it has been moved for cleaning. The top of the apron should finish ⅛ inch from the crown of the first table roll.

Slice adjustments on the gate type of slice shown in Figure 1 are of a comparatively simple nature. If the slice is moved back in the center the dry line goes further down the wire in the corresponding position. The actual adjustments are frequently made on a primary slice upstream of the main slice. Two slices give a more even sheet due to the turbulence introduced as the stock flows beneath the first one.

With any form of projection slice, the basic rules for low speed machines are the same as those discussed later for high speed machines, although the adjustments are usually of a less critical nature.

The clarity of a watermark may be affected by the following:

1 The amount of water in the sheet after passing the first flatbox.

2 The quality of beating; the quality and length of fibers.

3 The weight and diameter of the dandy.

4 The speed at which the dandy is driven.

5 The pattern on the dandy.

6 The basis weight of the paper.

7 The machine speed.

8 The openness of the sheet.

The amount of water to leave a good mark is a matter of experimentation with the first suction box. If there is too much water the dandy crushes the paper; if there is too little the watermark will be faint. A very fine stock gives the best watermark with wove papers. The wires sink into the body of the paper without encountering any long or hard fibers, thus esparto papers are known for their good watermarking qualities. For thin substances a well fibrillated stock is needed for a clear watermark, whereas a longer stock is needed for a good laid mark in order to avoid picks.

A small diameter dandy roll tends to dig up the surface of the paper due

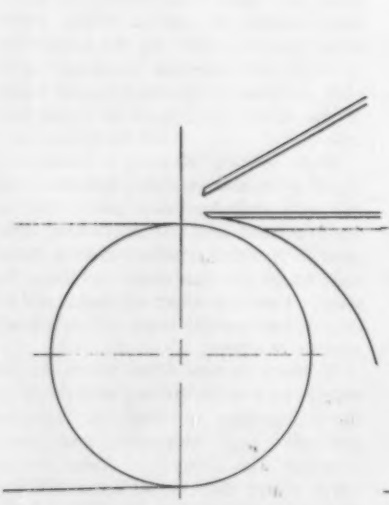

Figure 4a. Projection slice type A.

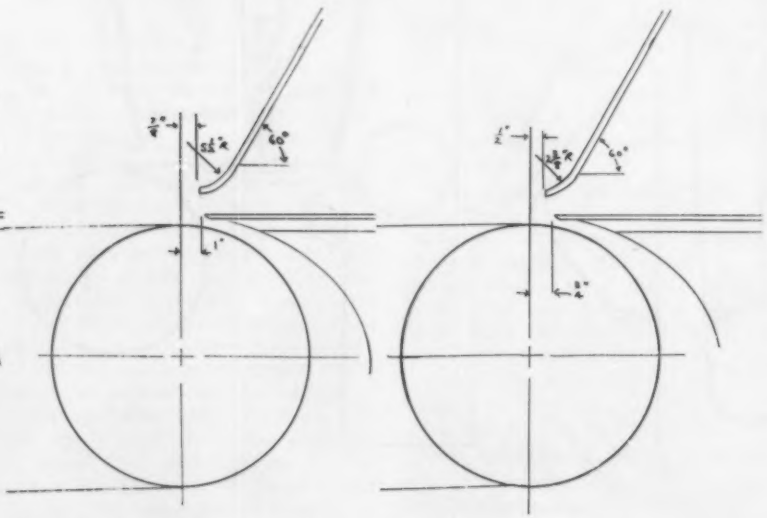

Figure 4b. Projection slice type B.

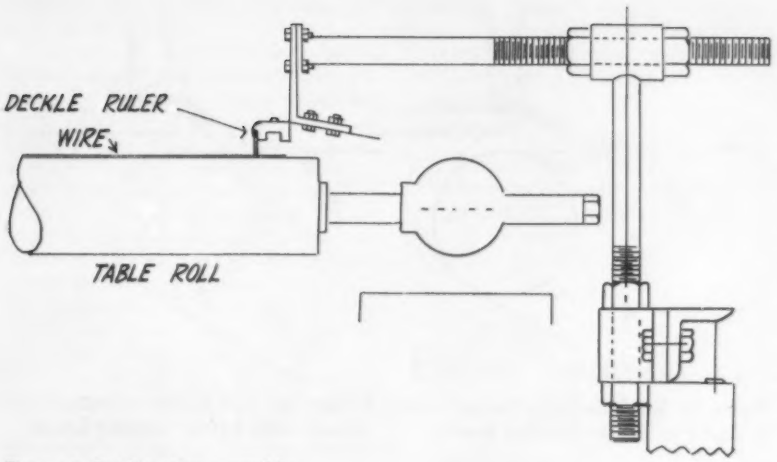

Figure 5. Deckle ruler assembly.

to the more sharp angle at which the pattern strikes the surface. This causes pick-ups, especially with thin papers. The remedies for picks are to raise the roll consistent with the character of the watermark, to reduce the speed, to alter the beating to give longer stock and to use a wiper.

Medium and High Speed Machines

The operation of the slice in the case of medium and especially of high speed machines is so much more critical than for low speed machines that it is worthwhile commencing this section by reviewing some design points.

For high speed and for low speed machines there are basically two different types of slice. These are shown in Figures 3 and 4(a) and 4(b). In connection with these the vertical or bar type are very subject to buckling and as soon as this is detected, the flexible blade that forms the actual lip must be changed. When the lip buckles, streaks occur on the wire and show in the paper and when adjustment of the slice is attempted at one point frequently a distant position of the lip several feet away across the machine may suddenly be affected as the tensions in the lip blade change. With this type of slice it is important that the adjustments made are small and at least three adjacent screws should be manipulated together.

With the projection type slices, it is very necessary to see that they are free at the edges. This is also true of the vertical slices where differential thermal expansion with hot stock between the slice lip and box can cause jamming at the edge and buckling. In the construction of such slices it is necessary to see that there are adjusting screws near enough to the ends to make sure that the edges can be adjusted.

Lips must be clean. If stock is allowed to gather on the lip a streak will be caused, whereas in the case of slow machines this matters very little because of the long time of formation. With fast machines it is important.

If the sheet being made is wider than the width the slice was designed for, it is necessary to bow out the deckles. This must be done evenly and necessitates both tilting the slice at the edge and bleeding off from the sides of the box just prior to the slice in order to maintain an even basis weight.

If the deckles are badly set, waves from the deckle will travel inward and affect the edges to a width of about a foot. The correct setting for deckles is parallel to the machine direction and slanting slightly outward from the vertical. The edges of the deckle where it is fixed to the headbox have to be cut off at the corners. The deckles must not rest hard on the wire or they will develop corrugations and cause edge disturbance.

Modern practice is to have the shortest deckles practical, one example in use today being illustrated in Figure 5. Figure 5 is the deckle developed by Gunnar Gavelin from the original design of van der Meer.

The jet should be placed on the wire at as near the wire speed as is possible for the grade of paper being made. For newsprint for example, about 95 per cent of wire speed is the usual jet speed for best operation. (Because of the square root relationship between speed and head, this is 90 per cent of the theoretical head. Operators often think the difference is greater but this is because they relate head and *machine speed* instead of head and *wire speed.*

In adjusting the screws of the projection slice care must always be taken to work with three screws at the same time, keeping the adjustments to the minimum. The reason for this is that when one screw is adjusted the flow below the adjacent screws is affected also. The idea of slice adjustment should be to avoid any crossing wave on the wire and obtain the most even dry line that is possible. The results of adjustment should then be correlated with a beta gauge composite profile in the machine direction.

Setting Headbox and Slice

At this point a discussion on the setting of slice and headbox relative to the breast roll seems in order.

With the vertical type of top lip formed with the rectangular type of air loaded boxes, varying positions are possible, as usually in addition to the adjustment provided to move the whole front of the box in and out, the breast roll may also be moved longitudinally. Three typical positions are indicated in Figure 6.

In these three cases setting **A** at a wire speed of 1800 to 1900 f.p.m. gave a steady discharge at the breast roll. As a result of the breast roll discharge, which amounted to about 15 per cent of the total drainage, the dry line at the flat boxes was even, though some small streaks from the headbox were persistent. With Setting **C** a breast roll discharge and similar appearance at

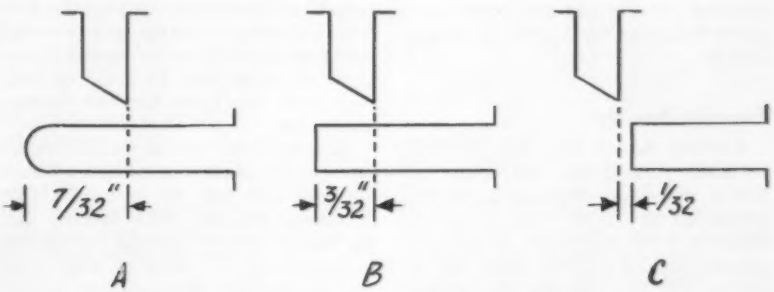

Figure 6. Different top lip settings relative to the bottom lip.

the flat boxes was obtained. The reason for this is that an advanced top lip will give a greater breast roll discharge, but in this case the relative position of bottom lip and breast roll reduced the discharge to about the same as for setting **A.** The effect of setting **C** however, was to give such a large discharge down the face of the breast roll that the water could not get away between the breast roll and forming board. The result was that a "jump" of major proportions occurred from the front edge of the forming board.

If the slice is so proportioned with a short table that there is no breast roll discharge, as obtained for example with Setting **B,** when the top lip is moved back far enough, then the imperfections of the delivery on the wire show up as an irregular dry line over the flat boxes. In such a case the only water removed at the breast roll is that coming out through the wire at a slight angle and being doctored off at the forming board, as indicated in Figure 7(a), whereas a true breast roll discharge has the appearance shown diagrammatically in Figure 7(b).

Similar relationships hold for the projection type of slice. The further back the bottom lip is relative to the center line of the breast roll, the more likely it is that there will be a discharge at the breast roll. The nearer the bottom lip is to the wire the greater will be this discharge.

With both types of slice it is vital to avoid a setting where a breast roll discharge may occur at some points across the width of the machine, but not in others, depending on the relative tension in different parts of the wire. It is also important with the vertical type slice to avoid a "double chin" where the jet first strikes the wire and is then caught by the breast roll suction.

The importance of the exact angle of impingement of the jet on the wire has been mentioned briefly above. This is important because the steeper the angle of the jet on to the wire the more any instabilities or irregularities, due to the flow in and from the headbox, are magnified. The bottom lip should always be set as close to the wire as practical as this always results in a better formation for a given set of conditions.

Forming Boards

Forming boards have two functions to fulfill. First if the wire is not supported at medium and high speeds it is pulled down on the surface of the breast roll by the weight of the wire and the suction that the breast roll develops. For this function the board is set with its leading edge about ⅛ inch

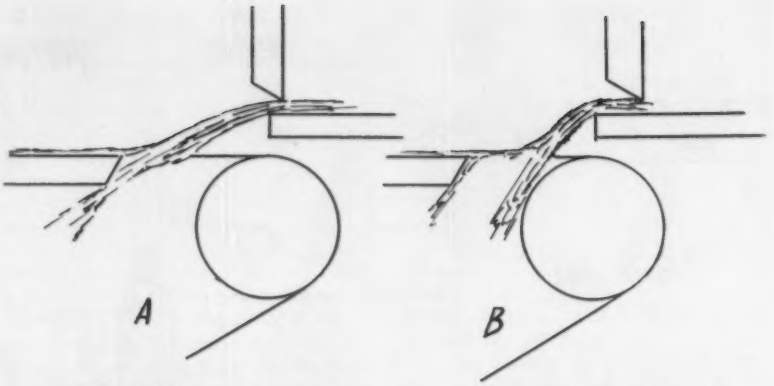

Figure 7a. Small discharge through wire is doctored off by forming board.

Figure 7b. True breast roll discharges through wire before forming board.

below the line formed by a straight edge from top dead center of the breast roll to the top dead center of the first table roll, and with its trailing or downstream edge at this line. The second function is either to delay drainage or to have a controlled drainage less violent than that produced by the first table roll. To fulfill the delaying function the board should have a flat plane surface or consist of bars of suitably surfaced material. It should have little outlet to drain water. For the latter function the bars with flat tops are angled to the wire and there is ample room for drainage; in certain special cases this may be aided by the use of barometric legs on each side of the machine.

Other Factors on the Table

There are several factors on the wire itself that can affect formation. Firstly, the spacing between table rolls and the subsequent deflection must be such that there is sufficient space to let out water without it surging against the under surface of the wire and disturbing the formation causing an immense stock jump at high speeds. A stock jump at the table rolls should be minimized or avoided by using the highest wire tension that is practicable and getting as much of this tension back to the table rolls by using the least practicable vacuum on the flat boxes. The use of T topped deflectors helps to keep the wire from following the table rolls provided sufficient tension can be applied; thus these are really only of value on long wire parts where the flat box vacuum can be low.

Barring on the wire or the occurrence of light, regularly spaced areas across the machine can be a considerable formation problem. The severity can be nearly always reduced by correct adjustment of jet speed to wire speed but the complete elimination of barring necessitates mechanical changes to the machine system or headbox.

The importance of the dry line for visual adjustment of the slice has been previously indicated. It should be remembered that a false impression can sometimes be gained by pulling hard on the first one or two boxes.

One point with regard to the wire itself that is important when laying the sheet is its age. The forming board should be kept low with a new wire or the stiff new wire will be held off the first table roll, and a choppy sheet and bubbles may be caused as contact is made and broken. With an old wire that is more flexible the forming board should be up to prevent too much wire wrap at the first table roll.

Extraneous Factors

In addition to factors at the headbox or on the wire there are a number of extraneous factors which often are allowed to influence sheet formation. The crowning of the rubber roll riding on the couch must be correct. If for example the crown is too great the paper will be wet at the edges as it is pulled off the couch. This will render feeding the paper through the presses difficult, as the center with lighter wet weight will break as the squirt is pushed across since the draw that is correct for the edge will be too great for the center. Such a condition will result in a tendency to run light edges which in turn will cause edge breaks.

If the press felts are allowed to fill up, then there will be a wet streak. If this is adjusted for at the slice the paper will be weak because the basis weight is low and breaks will result. A similar effect can make itself felt if the press crowns are incorrect.

Efforts to overcome a defective dryer section may result in incorrect crowning of the press rolls and changes to the sheet on the wire.

If it is at all possible, the policy should be to lay the sheet on the wire

correctly and to correct the other defects at their source.

The general conclusion with regard to stock quality and temperature are the same for high speed machines as for those operating at low speeds, though owing to the much lower times available to form the sheet they become more important and more critical.

So far we have not discussed the use to which the operator puts the machine variables that he notices. Having discussed the things that occur, it is possible to return to the list of observations which was given at the beginning of the article to note what may be found out while making the observations.

Observation of the flow at the slice tells the operator whether or not he has any trouble from the headbox causing light spots due to crossing waves, provided these are not due to grossly poor slice adjustment. By following the sheet down to the flat boxes from the headbox it is possible to note "barring" and to observe whether the crossing waves are so severe as to cause light spots. If the stock is rolling too fast for the wire or dragging on it, this can also be noted on machines of up to medium speed range. The dry line at the boxes gives a measure of the slice adjustment, assuming the headbox flow is satisfactory.

The actual position of the dry line, taken in conjunction with the consistency in the headbox and the vacuum or flat boxes and couch gives a knowledge of the stock quality and freeness that can be supplemented by direct measurement, refiner loads, etc. A change in stock quality is indicated by the change of vacuum on flat box or couch and by the necessity of changing the draw. Any change in weight shows on the flat box vacuum, other things being constant, and of course on a recording beta meter, if installed. The levelness and steadiness of the separation line as the paper is pulled off the couch demonstrates (if the drive is perfect) the uniformity of bas's weight both across the machine and in the machine direction. The headbox level is of course compared with that theoretically required for the machine speed when looking at the wire or judging the finished paper .

Summary

In this article, the author's knowledge of the running of slow, medium and high speed paper machines has been set down. The basic rules may be summarized as: 1. A flat regular jet, 2. Breast roll discharge either controlled or none at all but never an intermediate condition, 3. Make slice adjustments at several screws at a time, 4. Ensure that there is room for drainage at all table rolls, forming boards, etc. 5. Maintain wire tension, 6. Use the minimum possible suction at the flat boxes. The points that must be attended to make these points possible have been discussed.

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Describes their line of precision shaft seals. Also gives ranges for standard types and engineered models offered for other applications. Bulletin. Borg-Warner Mechanical Seals, Div., Borg-Warner Corp., P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif.

From Concept to Construction

Illustrates and describes the design approach, materials, construction and modern facilities used in manufacturing a variety of centralized control and data presentation systems. Bulletin 106. Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.

Flowmeters for High Temperatures, Pressures, or Flow Rates

Description and technical data is given for three types of flow meters. (1) Specification Bulletin 10A1152, variable area armored Flowrator meter for high temperature applications, both gas and liquid service. (2) Specification Bulletin 10A1156, high capacity Flowrator meter for flow rates to 4360 g.p.m. (3) Specification Bulletin 10A1159, super high pressure variable area armored Flowrator meter for high pressure applications to 30,000 p.s.i. Fischer & Porter Co., 817 Jacksonville Road, Hatboro, Pa.

Oilgear Fluid Power Equipment

Includes specifications, illustrations and descriptive matter on the complete line of standard Oilgear and Servocontrol Div. equipment. Bulletin 10051-G. Oilgear Co., 1571 W. Pierce St., Milwaukee 4, Wis.

The Advantages of Air Motors

Features over 100 popular air motors which cover a power range from 0.3 to 24 h.p. with speeds running from 50 to 2580 r.p.m. at rated horsepower. Both multivane and piston motors are listed with complete specifications and dimension drawings. Bulletin 5072A. Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

Dowpac—Applications in Waste Treatment

Contains illustrated information on the product's physical properties, assembly instructions and operational characteristics. Also gives information which explains the wide design latitude possible with Dowpac and includes performance data gathered from a variety of pilot plant installations. Booklet. Plastics Merchandising Dept., Dow Chemical Co., Midland, Mich.

The What, Where, How, and Why of Draft

Tells what draft is, how it is measured, what the draft gauge tells, and how to select the draft gauge to suit particular requirements. Section two discusses where to measure draft and pressure in a modern steam plant, while the remaining three are devoted to information concerning where to connect and how to install draft gauges. Bulletin 58-S201. Hays Corp., Michigan City, Ind.

Your Next Paint Job

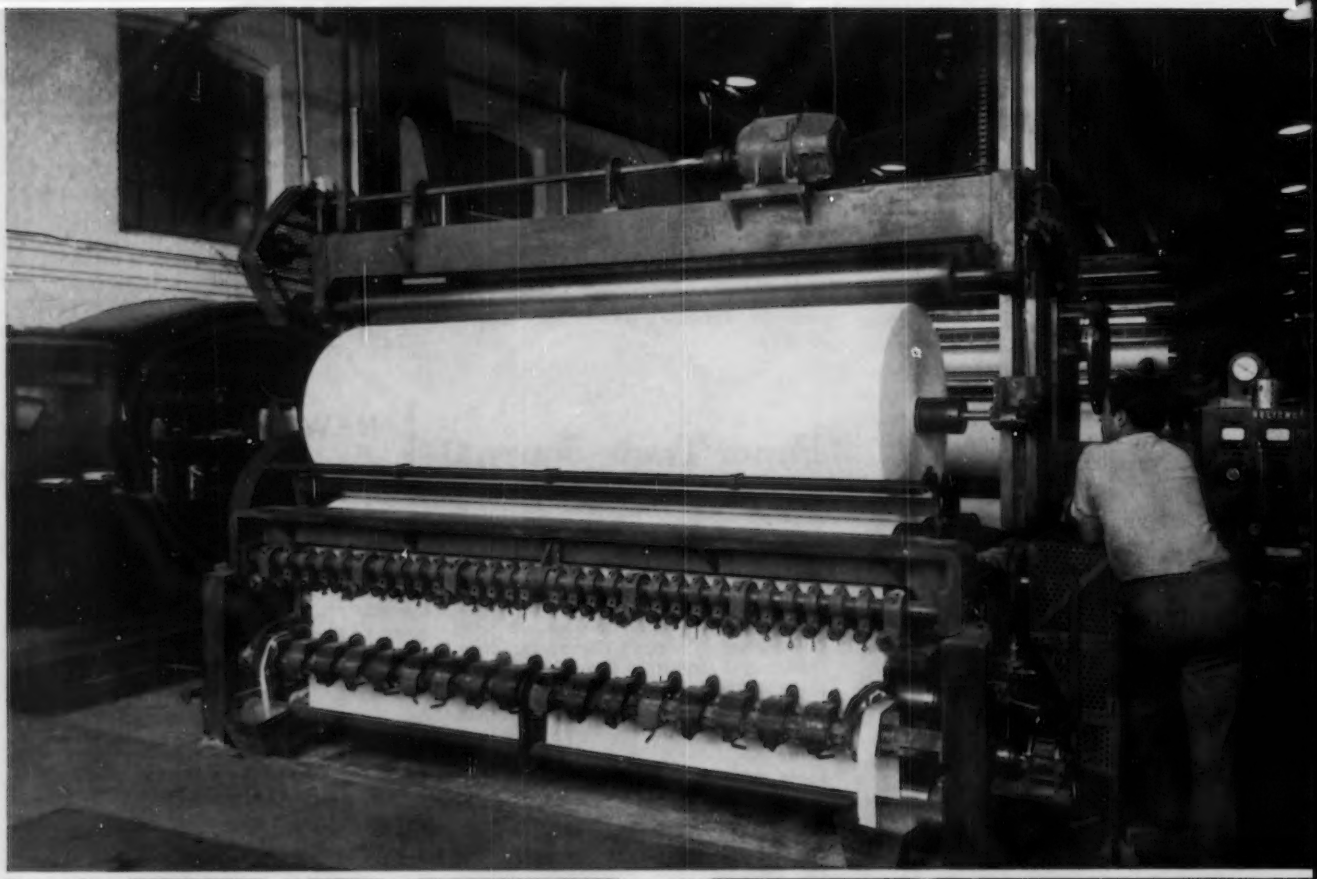
Explains how to obtain low cost painting best suited for lasting results for both interior or exterior applications. Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland, Ohio.

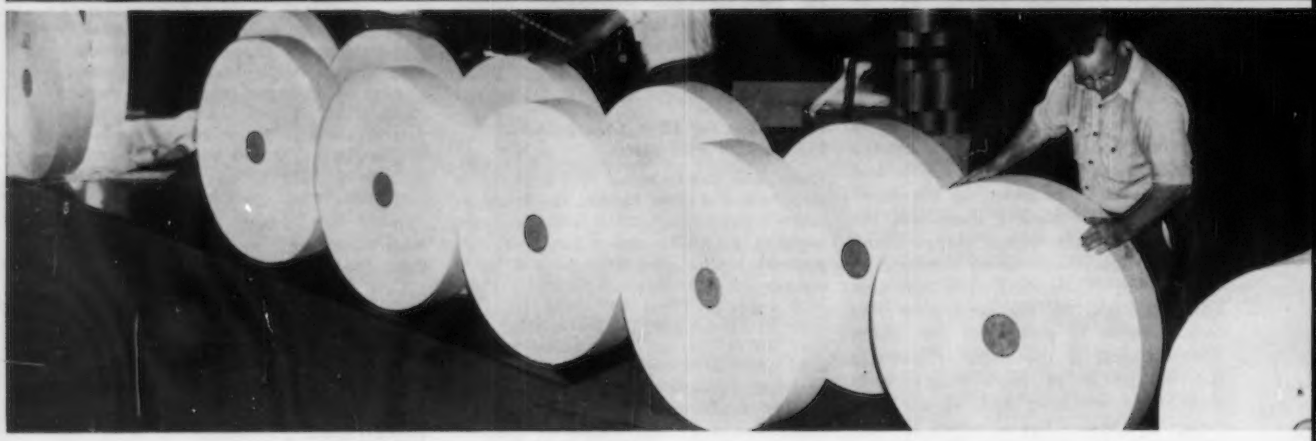
Ryerson Data Book

Provides aluminum analyses, characteristics, mechanical properties and tolerances, which are in addition to previously published information on steel. Other editions are not obsolete, as the principal change is the adding of aluminum data. Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.

Sprout-Waldron Knife Cutters

Includes design details of the various Sprout-Waldron knife cutters. Also traces the history of knife cutter development from the original corn cutter to the latest heavy-duty industrial units. Form 1031. Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.





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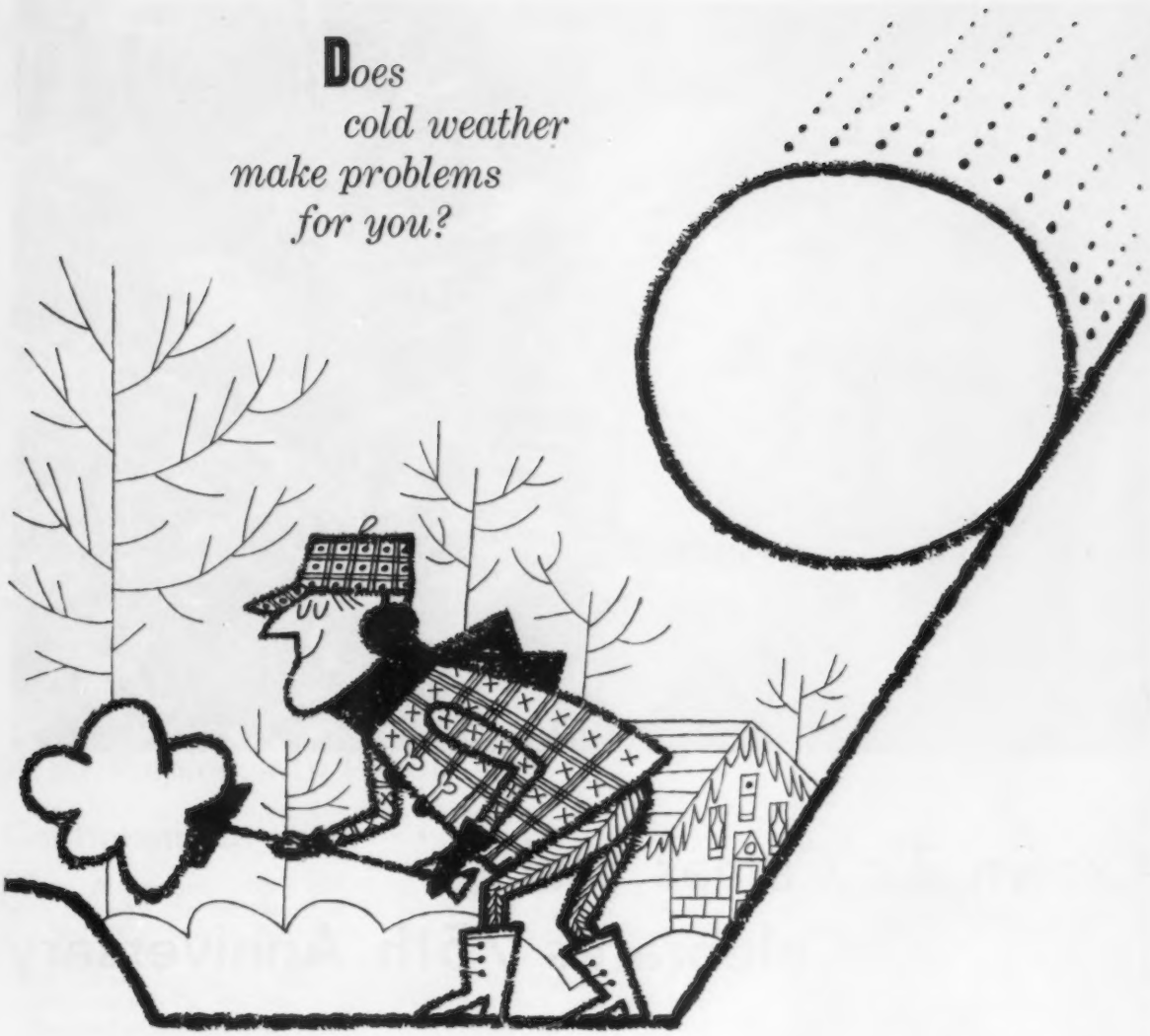

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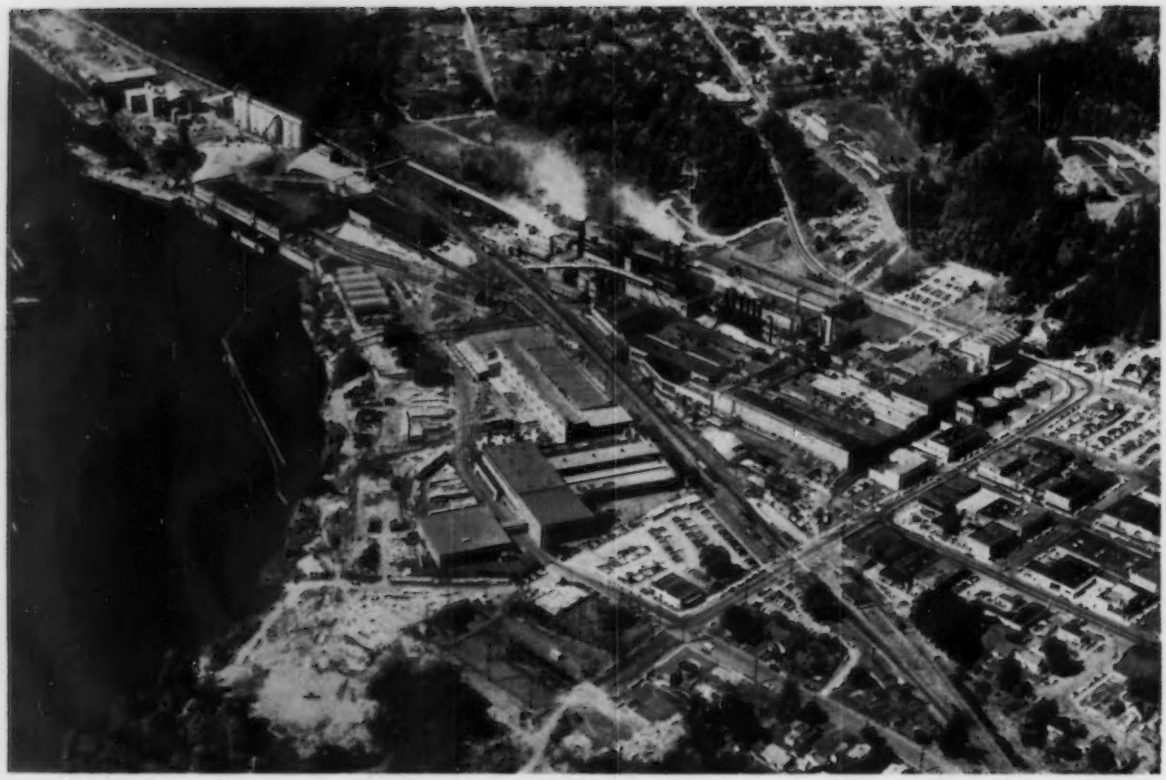


Crown Z's Camas Mill Celebrates 75th Anniversary

Many interesting developments at the mill and adjoining research department show its continued vitality and growth.

Crown Zellerbach's Camas division celebrated three quarters of a century of papermaking this year with several new production records including an all-time high in paper tonnage produced during a single month. On August the paper mill manufactured 24,065 tons of paper, a daily average of 804.4 tons, topping the previous mark which was set in April 1956. Production records were also established in the kraft pulp mill, converting plant and bag factory.

Despite some curtailments in production during 1958, the Camas mill payroll has continued at the 2,600 level of 1957. This is the largest single pulp and paper payroll in the west and accounts for nearly one-fifth of the pulp and paper industry's employment in Washington, the nation's ranking pulp producing state.

Continued Growth

Since it brought the pulp and paper industry to the Washington territory in 1883, the Camas mill has continued to grow and pioneer in the development of new manufacturing tehniques and processes. In this, 1958 has been no exception.

A Pandia digester, which makes kraft pulp from wood waste in a continuous pulping process, was placed in operation early in 1958. This unit, after several months of shakedown, is now operating on a scheduled basis. The Pandia, which is the only continuous digester now operating in a Washington or Oregon pulp mill, has a daily capacity of about 100 tons. More information is given on this installation later.

In the consumer products lines, addition of lanolin to Chiffon and Zee tissue and toweling has strengthened Crown Zellerbach's market position in this im-

portant field. The development work on lanolin-impregnated products was researched and perfected at the company's Camas Central Research Department.

A coating machine was rebuilt and converted for use as an experimental coater to develop new coating processes for possible application at Camas and other company mills. This machine is also serving as a production unit for a limited number of grades.

Enlarged capacities in the kraft mill and bleaching plants has resulted in increased shipments of Camas-made pulp to Crown Zellerbach's other division in the east, south and California.

Interest in the Camas paper school, now in its 26th year, continues high with 230 students enrolled from eight company operations studying papermaking operations in the four year sequence.

Manufacture and sales of dimethyl sulphide, a chemical product made from kraft pulping leftovers, increased substantially this year according to Dr. W. M. Hearon, general manager of the chemical products division. The dimethyl sulphide plant operates a unit of the Camas mill. (See *Paper Trade JOURNAL* Sept. 15, 1958 for details).

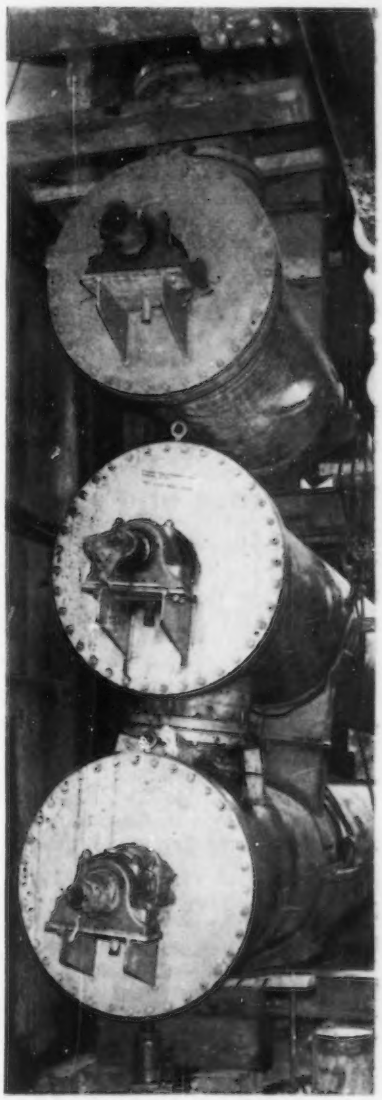
Pulp Wood Sources

Over the years, as the mill has grown from its original four-tons-daily paper production to its present capacity of more than 800 tons every 24 hours. Initially spruce was the principal wood source, then hemlock, and today the bulk of consumption is in Douglas fir and hemlock.

Currently about 45 per cent of the mill's wood needs are filled by leftovers purchased from other forest industries in the form of chips, edgings, slabs, and peeler cores. Another 20 per cent of the mill's wood fiber comes from cottonwood and alder, largely purchased from farmers and other private timberland owners in the Columbia river area. This year only 35 per cent of the Camas mill's wood supply came from market grade logs. All of these are pulp grade rather than lumber quality and were cut in the company's Western Washington and Oregon tree farms.

Research Projects at Camas

Construction of a pilot plant to do research on bagasse pulp made from sugar cane stalks is the newest development at the Central Research Department. Camas scientists are seeking new methods to make stronger and better quality bagasse paper. They are also studying the economic potential of a bagasse plant located near the Hawaiian sugar cane fields to serve the islands' 600,000 population. The project is a cooperative venture of the Hawaiian Sugar Planters Association and Crown Zellerbach. The pilot plant, scheduled



Three of the four tubes in the Pandia Chemipulp digester on kraft.

Kraft Pulping with Pandia Continuous Digester

Early this summer, Crown Zellerbach completed the installation of a 100 tons daily capacity Pandia continuous digester at its Camas, Washington mill, thus increasing the mill's kraft potential capacity to 700 tons.

The new Pandia unit, the first installation of this type to be located in a Washington or Oregon mill, was manufactured by Black Clawson. It consists of four horizontal tubes 39′ long, 42″ in diameter and placed one above the other. Wood, steam, and kraft white and black liquor enter the digester continuously and are moved through the four tubes by a screw conveyor. Retention time for a cook is from 20 to 30 minutes.

This installation is particularly interesting as it represents the first full scale regular commercial operation of a Pandia unit for kraft pulping. Of equal interest is the fact that the wood waste pulped is sawdust-like material. It should be pointed out however, that most of this is sawmill kerf, the long fibered sawdust produced by West Coast lumber mills.

The summer and fall cutback in kraft production, plus the mechanical difficulties encountered in the shakedown period, have kept the continuous digester's production below the limits of its full capacity, but, in the installation of the Pandia unit, Crown Zellerbach engineers have retained sufficient room for two additional horizontal cylinders should an increase in capacity be required at a later time.

"We're still learning considerable about continuous cooking," says L. D. McGlothlin, kraft mill superintendent of the Camas mill, "but we feel that the pulp made from wood waste in the continuous digester has good forming characteristics and papers produced from it meet the rigid quality specifications necessary in the efficient operation of the present day high speed paper machines and automatic converting equipment."

Some of the sawdust used as raw material for the Pandia digester is obtained through the chip screening operation at the Camas mill, but the bulk is saw mill kerf purchased from nearby saw mills and is shipped in, either by rail or truck. On arrival, this material is unloaded by vacuum and put through the regular chip handling system.

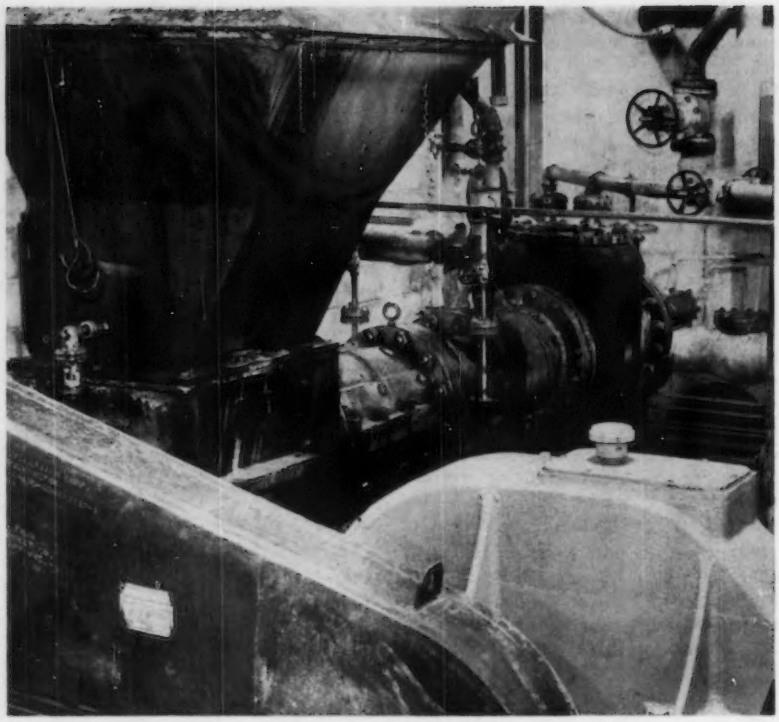
The Camas kraft pulp mill was expanded in 1956-57 and, at that time, all the necessary new equipment was sized to take care of the Pandia digester and one additional silo was installed to take care of wood waste storage.

for a December 15 startup, will house two refiners and a 100-cubic foot batch digester.

For the first time in its history the Central Research staff is investigating new wood products outside the pulp and paper and chemical fields. A woods product project team has already produced a decorative plywood panel and a promising new method of plywood gluing. This work is being done for Crown Zellerbach Canada, Ltd.

Basic research scientists are now at work in the laboratory. Dr. W. W. Moyer, director of research, said "These men are free to explore long range projects and processes which may result in products of value to the corporation in the years ahead."

Another phase of research underway at Camas is the continuing intensive study of the Columbia River to determine precise causes for the growth of Sphaerotilus—a non-toxic slime found in the Lower Columbia during certain periods of the year. Since this research study began early in 1956, Crown Zellerbach has spent nearly $200,000 in river and laboratory study. The project, carried on in cooperation with the Washington Pollution Control Commission, is conducted by a research team headed by Dr. E. J. Ordal, microbiologist from the University of Washington School of Medicine. A full report on this river study project was made to members of the Washington Pollution Control Commission and the Oregon Sanitary Authority in Camas last May. The studies have developed a number of promising leads which are being investigated on a broader scale. For example, bacterial fermentation which could lead to the development of a saleable by-product, shows considerable promise in reducing the Sphaerotilus growth.



Feed screw and hopper arrangement on Pandia digester.

Size Press and Calender Treatment Meeting

"Size Press and Calender Treatment" will be the theme for the third annual Pulp and Paper Conference, to be held at Western Michigan University Wednesday and Thursday, Jan. 14 and 15, 1959.

All sessions will be held in the Paper Industry Laboratories building on the campus, with Dr. A. H. Nadelman as the host. Also working on the program have been Dr. R. A. Diehm, general chairman, Dr. John R. Fanselow, Miss Carola Trittin and Raymond L. Janes.

President Paul V. Sangren will welcome those attending at 2 p.m. Wednesday afternoon, to be followed immediately by the first technical session on "Size Presses," moderated by Morris W. Kane, technical director, The KVP Company. Speakers include Otis Whitworth, staff engineer, Black-Clawson Co.; Dr. P. H. Dixon, vice president, Fox River Paper Co.; Harley Nelson, technical director, Allied Paper Corp.; J. D. Lean, vice president, Rex Paper Co., and John D. Dickson, Jr., sales engineer, Stowe-Woodward, Inc.

Dinner will be in the University Student Center, with Bert H. Cooper, vice president, Kalamazoo Paper Co., and president of the Paper Technology Foundation, Inc., presiding. F. E. Bahrenburg, vice president, Watervliet Paper Co., will speak on "Two Challenges."

At 8:30 the group will move back to the Paper Laboratories for the dedication of the new WMU paper machine, with Mr. Cooper presiding, the presentation by Dr. Fanselow, and acceptance by President Sangren.

Thursday's first technical session will begin at 9, on "Calender Treatment," with Joseph Cutro, chief engineer, Otsego Falls Paper Co., as the moderator. Speakers are Paul Pringle, sales engineer, Beloit Iron Works; Glen Renegar, mill manager, Container Corporation of America, Philadelphia, Pa.; and E. E. Stephenson, director of quality, Sutherland Paper Co.

Harry Weston, executive secretary of APPMSA will be the luncheon speaker, discussing "Refresher Courses in Pulp and Paper." Dwight L. Stocker, president of the KVP Co., will be the toastmaster.

At the concluding session Thursday afternoon the subject will be "Practical Calender Box Treatments," with A. T. Luey, executive secretary of the Boxboard Research and Development Assn., as the moderator.

His panel will include Joseph L. Waber, quality supervisor, National Gypsum Co.; Charles Jakeway, technical superintendent, American Boxboard Co.; William Kroeschell, technical director, Michigan Carton Co.; Russell Lewis, technical director, Ohio Box Board Co.; Leslie Peck, superintendent, Mac Sim Bar Paper Co., and William Manor, technical director, Consolidated Paper Co.

Attendance at the conference will only be limited by the capacity of the available facilities. Reservations, at $10 each, should be made with Dr. R. A. Diehm at the university.

Heat Exchange Equipment as Used in Modern Mills

Present applications are listed and discussed briefly, special problems are referred to and possible new applications outlined.

William C. Pittam
Pulp and Paper Engineer
Stone & Webster Engineering Corp.

Heat transfer is vitally important in the pulping processes, and particularly when heat quantities of 10 to 20 million Btu's per ton of bleached pulp are involved.

A heat exchanger is not a glamorous piece of equipment. It does not have any moving parts, and usually operates without any noise and it is not surprising that heat exchangers lose their identity to the associated equipment.

In most cases, the fundamentals of heat transfer are generally applicable in the pulp and paper field.

Transfer Methods

There are three ways in which heat energy flows, namely, conduction, convection and radiation. Since radiation does not play a significant part in most types of heat exchangers, except flame fired equipment, it can be ignored and consideration given to the remaining two.

Conduction is movement of heat through a substance, and requires the hot side and cold side to be connected by a heat conducting material.

Convection is the movement of heat within a fluid, gas or liquid, by mixing one portion with another to form an intermediate temperature for heating, cooling or condensing of a material.

Formula for Heat Transfer

In each case, the quantity of heat transferred is directly proportional to the rate at which the substance will conduct heat, to the area through which the heat is transmitted, and the difference in temperature between the hot and cold sides.

The general formula for determining this quantity of heat is:

$$Q = UA\Delta T$$

When Q is total heat flow in Btu per hr, U is an overall coefficient of heat transfer, A is area in square feet and ΔT is the effective difference in temperature betwen the hot and cold sides.

U is the most difficult to evaluate since it changes with so many of the conditions within the heat exchanger. Published values of U are predicated on clean new surfaces for heat transfer equipment, a condition that rapidly disappears after a few hours operation: therefore, experience and knowledge play an important part in determining the proper U factor to use in designing a heat exchanger and the total number of square feet required in any piece of equipment.

Classified by Application

Heat exchangers can be classified into five different categories according to their application.

These are liquid to liquid, vapor to liquid, gas to liquid, gas to gas, and vapor to gas.

Table No. I is a list of most of the heat exchangers found in pulp and paper mills for transfer heat from a hot liquid to a colder one. In all cases, the hot liquid is in a closed circuit and is pumped through the tubes, while the liquid in the shell is water and is heated by this means for process use. Flow on both sides of the tubes is turbulent in every case and countercurrent for greater efficiency.

The commonest application of heat exchangers found in pulp and paper mills is for transfer heat by means of hot vapor, meaning steam, to cold liquid. In this category there are two types of units, the first (Shown in Table II) in which the two mediums are separated by a thin metal wall of the condenser tube and thus do not mix, and the second type, shown in Table III, where the two mediums are directly in contact and are intimately mixed. This type has the advantage in efficiency and the ability to handle large loads. However, the resulting mixture of water and condensate must be discarded if the condensate contains undesirable contaminants.

Table IV is a list of gas to liquid heat exchangers found in most mills. In all cases, the gas and the liquid do not mix appreciably, even in the spray type. The spray type sulphur cooler has the additional advantage of selectively absorbing the sulphur trioxide, which is undesirable, from the gas stream.

Table V lists the few heat exchangers using a gas to gas exchange of heat. In all cases, the gases do not come in direct contact with each other. Radiation has a great deal of significance in this type of heater because of the high temperature.

The last list, Table VI, shows the heat exchangers which transfer heat from a vapor to a gas. Generally speaking, most heaters of this type are for heat-

ing air with condensing steam. Special tubes with fins have been devised in order to get more surface exposed per unit area.

Methods of Overcoming Troubles

Understanding the fundamentals of heat exchange and types of heat exchangers also calls for a knowledge of some of the troubles encountered by the operators and methods of overcoming them.

Heat exchangers using condensing steam for heating have their efficiency reduced by air binding and flooding. Air binding is the gradual collection of noncondensible gases in the steam chest. These fill the space and reduce the effective heat transfer area.

Flooding occurs when condensate removal lags behind for any reason, such as back pressure on the condensate line, an inoperative or too small trap. The former is particularly troublesome if more than one digester heater is piped to the same discharge line ahead of the condensate collector tank. The best design will incorporate a condensate line from each exchanger, with the line to have a minimum of elbows and as much hydraulic leg as possible.

Schedule of Boilouts

On the liquor side, plugging is the major problem. Drilling tubes is expensive and can lead to tube damage where the tubes are long and have twisted or collapsed. It is generally agreed that a strictly-adhered-to schedule of boilouts with commercial cleaning solution is the answer, particularly for digester heaters. A permanently piped cleaning solution system is desirable.

Even with all this equipment, maintaining digester heaters is expensive. Recently a large kraft mill abandoned all of its heaters and returned to direct steaming in order to reduce costs.

Piping Arrangement

On natural circulation black liquor evaporators regularly scheduled boilouts are required. Level control has been found superior to boiling point rise as a means of controlling tube plugging. A recent installation on the Pacific coast of a sextuple effect Buflovak black liquor evaporator using a triple pass high velocity first effect heat exchanger is producing high concentration black liquor without plugging.

Evaporation of waste liquor in sulphite mills is accompanied by the precipitation of calcium salts on the heat exchanger tubes. By arranging the piping so that the sides of the exchanger can be switched at intervals, the acid condensates will keep the calcium deposits dissolved and the tubes clean.

TABLE I—Liquid to Liquid Exchange Applications

Description	Service	Type
Digester relief gas second stage cooler	Cools condensed relief gases to low temperature	Shell and tube
Blow steam condenser heat exchanger	Cools tank of condensed blow steam by heating water	Shell and tube
Furnace gas cooling tower water cooler	Cools circulating condensate in flue gas line of MgO recovery system	Shell and tube
Oil cooler — paper machine	Cools oil in circulating system	Shell and tube

TABLE II—Vapor to Liquid Heat Transfer

Description	Service	Type
Sulphur melter and melted sulphur heater	Melts sulphur and keeps it liquid by condensing steam	Shell and tube
Digester heaters	Heats circulating liquor by condensing steam	Shell and tube
Waste liquor evaporators	Boils off vapor by condensing vapor from preceding effect	Shell and tube
Evaporator surface condenser	Condenses vapor from low pressure effect with cold water	Shell and tube
Black and Red Concentrated liquor heaters	Heats viscous waste liquor ahead of furnace atomizer nozzles by condensing steam	Shell and tube
Green liquor heater	Warms green liquor from cold storage by condensing steam	Shell and tube
Circulating oil heater	Heats cold lubricating oil with condensing steam	Shell and tube
Fuel oil tank heaters	Heats cold fuel oil with condensing steam	Shell and tube
Starch cooker	Heats starch solution by condensing steam	Jacketed kettle

TABLE III—Vapor to Liquid Heat Transfer Intimate Mixing

Description	Service	Type
Blow steam condenser	Condensing kraft mill digester blow steam with cold water	Direct contact
Evaporator jet condenser	Condensing water vapor from final effect at low pressure	Direct contact
Steam jet water chiller for sulphite cooking liquor and chlorine dioxide preparation	Cooling warm water by boiling it under a vacuum produced by condensing steam and water vapor	Direct contact
Water heater	Raise temperature of water by condensing steam	Direct contact
Paper machine dryer rolls	Evaporate water in sheet by condensing steam	Tube open

TABLE IV—Gas to Liquid Heat Exchangers

Description	Service	Type
Jenssen sulphur cooler	Cools sulphur burner gas in lead pipes by cold water flowing over outside of pipes	Tubes open
Chemipulp sulphur dioxide cooler	Cools sulphur burner gas by direct contact with water spray inside of closed tank	Spray
High solids waste liquor evaporator	Evaporates black liquor by intimate contact of liquor with hot flue gas	Disk type cascade Cyclone spray
Compressor air coolers	Cooling air heated by compression with cold water	Shell and tube

TABLE V—Gas to Gas Exchange of Heat

Description	Service	Type
Boiler air heater	Heating combustion air with hot flue gas	Shell and tube
Space heater, portable or fixed	Heating buildings by burning gas or oil in a shell and blowing cold air across the shell	Shell and tube

TABLE VI—Vapor to Gas Exchange of Heat

Description	Service	Type
Superheater	Hot combustion gases superheat steam	Tubes open
Space heaters	Condensing steam heats air flowing through coils	Tubes open
Boiler air heater	Condensing steam heats air flowing through coils	Shell and tube

Gas to gas, liquid to liquid, and gas to liquid heat exchangers operating at temperatures and with materials normally associated with the pulp and paper mill do not require much maintenance or more than an occasional inspection.

Many Improvements Likely

The future of heat exchanger technology in the industry will undoubtedly produce many improvements but few startlingly new developments. However, with the frontiers of knowledge being constantly expanded through applications in the gas turbine, atomic reactor and rocket engine fields, anything is possible. For example, it is interesting to speculate on the possibility of a direct fired black liquor evaporator using techniques developed for the production of auxiliary steam power in rocket engines.

It is more reasonable, however, to speculate on the possibilities of recovering low grade heat from sources now being wasted to the atmosphere. It is generally accepted that where heat is being wasted, an exchanger can be justified if the recovered heat is sufficient to pay out in three to five years.

At present, some mills recover the heat from the paper machine hood stacks and from the exhaust from the smelt dissolving tank. There are many more points about the mill which can be exploited.

Canadian Technical Meeting Program

The Annual Meeting of the Technical Section, Canadian Pulp and Paper Assn., will be held at the Queen Elizabeth Hotel, Montreal, on January 28, 29 and 30.

The program will include papers on the following subjects:

Operating Experience with Steam Generator Burning Wet Bark and Oil.

New Pressing and Bark Burning Techniques at Canada Paper Co.

Bark Handling and Burning at St. Lawrence Corp. Ltd.

Discussion of Problems in Drying Operation which will include discussion of drainage systems and effect of superheat in steam, syphons, Grewin systems, felt tension and reconditioning, hoods and dryer surface condition.

Instrumentation for Stock Proportioning Systems—covering the use of orifices, magnetic flowmeters and area flowmeters.

Palletization—An Industry-wide Survey.

Dividends from Industrial Truck Driver Training—A Case History at Spruce Falls.

Automation of Rail Pulpwood Handling—A Progress Report.

Enclosed Dryer Gear Drive Installation.

Metallurgical Factors Affecting Calender Roll Performance.

Application of Extremultus Belting to Paper Mill Drives.

Acid Cleaning of Boilers.

Gloss Ink Printing of Paperboard.

Discussion of Cylinder Machine Vats.

Discussion of Board Mill Operating Problems.

The Problem of Fuzz in Fine Paper Manufacture.

An Industry-wide Study of the Factors Affecting Fourdrinier Wire Life.

Application of Wire Life Study Findings to News Machines. In addition there will be two papers describing independent investigations into the wire life problem at a mill research department.

Evaluation of a Third Press Installation on a Pulp Drying Machine.

Alkaline Pulping of Poplar.

Advances in the Design and Operation of Chlorine Dioxide Generators.

Hardwood and Softwood Kraft Pulping in Continuous Kamyr Digesters at Eastern Corp.

High-Yield Sulphite Processing.

The Inter-relation of Ink and Paper.

The Permanganate Consumption of Pulp Materials—Part IV: The KAPPA Correction Coefficient.

Infra-red Radiation Applied to Paper Drying.

Insulation of Dryer Heads to Eliminate Over-drying at Edges.

Electrical Insulating Liquids.

Semi-Conductor Rectifiers for Synchronous Motor Field Supply.

The 1959 Summer Meeting of the Technical Section is scheduled for the Manoir Richelieu, Murray Bay, P.Q., June 17th, 18th, 19th and 20th, 1959.

Publication of the article on the subject of On-Machine Coating of Paper by Harold Murtfeldt, Consolidated Water & Power Co., in our November 24, issue, was an error.

This article was intended for our own information as purchasers of coated papers, and was not intended for publication by Mr. Murtfeldt.

New Porosity Tester Is Quick, Accurate

A new high-speed, variable-area Porosimeter® instrument for testing a wide range of paper porosities quickly and accurately is available from the Sheffield Corp., Dayton 1, Ohio, subsidiary of Bendix Aviation Corp.

Porosity is determined by measuring the rate controlled air flows thru the test area. The position of a small float in a column of air in the Precisionaire® instrument indicates the degree of porosity.

The Porosimeter is supplied with four sets of rubber seals, each having a different orifice size to permit various size test areas. Dense, relatively nonporous papers require a larger size test area than the more porous papers such as those up to the filter range. This flexibility in test area size permits more realistic appraisal of product quality. Approximately two seconds are required for a complete test cycle—regardless of the degree of porosity. The sample clamp is operated by a pneumatic foot valve, allowing the operator to use both hands for sample handling and recording of test data. The Porosimeter gaging fixture can be used as an accessory to the Sheffield Smoothchek® paper smoothness gage without an additional

Precisionaire instrument. Furthermore the same scales, instrument air pressure, and calibration procedure are common to both instruments, thereby reducing equipment costs and eliminating the need for additional operator training.

PVC Pump Resists Chemical and Corrosion Attack

A new line of all-plastic PVC centrifugal pumps was announced recently by Vanton Pump & Equipment Corp., Hillside, N. J. The application of the excellent corrosion resistance of PVC to a centrifugal pump design is said to open new possibilities for solving many of industrys' difficult pumping problems.

This line of pumps is constructed with all wetted parts of unplasticized, unmodified polyvinyl chloride, offering the broadest possible range of chemical resistance as well as the non-contaminating transfer of sensitive solutions. Available in four pump sizes, these units offer capacities from 10 to 180 g.p.m. with discharge heads to 100 ft. Solution temperatures to 140°F can be handled.

The heavy sectioned PVC casing is totally protected by a cast iron frame giving rigid support. The impellers are molded and are of a dynamically balanced design. Vanes are contoured to offer maximum efficiency. All PVC centrifugals are equipped with mechanical shaft seals of the latest design which are available in a range of materials to cover virtually all corrosive applications. Pumped fluid contacts only the facings of rotating and stationary rings which are available in a wide range of materials that include Teflon, carbon, ceramic and Stellite. The unit is so designed that stationary rings can be reversed for additional use after long periods of service.

Simplicity of maintenance is also featured in this new line. By removing just six bolts the casing may be opened and the impeller inspected or replaced without breakdown of the entire pump. The heavy duty shaft, constructed of stainless steel with a PVC cover on the wetted end, can be removed from the pump from either direction. All pumps can be completely dis-assembled without the need for special tools or removal from base and motor. In the bearing pedestal, low friction roller bearings are used for quiet operation and are widely spaced to reduce loading. A grease reservoir is provided to assure long bearing life.

Quick-Coupled Piping for All-Stainless System

A new line of Schedule 5 and 10 roll grooved stainless steel pipe fittings, just introduced by Victaulic Company of America, Elizabeth, N. J., for installation with Victaulic couplings makes possible for the first time a complete quick-coupled, all-stainless steel piping system. Victaulic has announced the line as the first in a series of new fittings that will permit integrated quick-coupled systems in a wide range of piping materials.

Stainless steel elbows, tees, crosses, returns, stub and blank ends, reducers, and reducing tees, with roll-grooved ends, are available from stock in sizes that range from 1¼″ to 4″ in diameter. Additional sizes of fittings can be promptly produced on order.

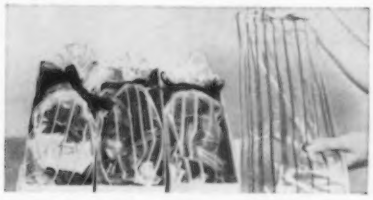
Strong, hard and tough, the new fittings are made from AISI Types 304 and 304L austenitic 18-8 chromium-nickel stainless alloy. They are also available in 316 and 316L alloy, con-

U.S.I. POLYETHYLENE NEWS

A series for plastics and packaging executives by the makers of PETROTHENE® polyethylene resins

Packaging Notes

Colorful striped polyethylene film makes possible unique package creations. Produced from U.S.I. PETROTHENE resins by a midwest extruder, the film is competitive with printed striped film in price. Unlike printed film, the film with extruded stripes looks equally attractive on both sides. The color will not rub or wear off.



Polyethylene film — with extruded-in stripes that won't rub or wear off — is equally attractive on either side and can be obtained in a raised or embossed effect to provide a rich feel.

The film is produced generally as a clear film with stripes of any single color. It is also possible to produce two different color stripes, or to construct a die to produce alternating stripes on a clear background, or even to obtain a three color effect. Translucency or transparency of the colors can be varied as desired. A raised or embossed effect is also possible. The film is made with standard extruders which have been modified considerably to make possible the fusing of two or three different color streams within the die.

The film is produced as tubing in production thicknesses ranging from 1.25 to 10 mils. It is expected to be used for novelty packaging of candy, cosmetics, stationery, some soft goods, toys, cotton balls and other drug items, and certain foods.

Transfer labeling of poly squeeze bottles is being done at savings of 75% in printing costs by means of a new direct thermal transfer method. The transfer labels are printed on a kraft paper carrier. Heat and pressure applied by a special machine transfers the legend to the squeeze bottle.

The method is said to combine the attractiveness and durability of preprinting with the versatility and economy of labeling. The transfer unit can be mounted on any standard wrapping, bundling or bagmaking machine.

New machine forms and heat-seals polyethylene-coated blanks to produce cartons and trays which are highly resistant to grease and moisture without the need for liners. The machine operates at speeds up to 180 or more units per minute. It is designed for packaging cookies, crackers, fig bars, confections, frozen foods, cosmetics, cigarettes, vegetables and other products.

Comprehensive Guide to Polyethylene Processing Completed by U.S.I.; Copies Now Available

100-Page Guide Covers Molding, Extrusion and other Problems

U.S.I. has just released a useful, comprehensive booklet on polyethylene processing. The 100-page booklet "PETROTHENE® Polyethylene . . . A Processing Guide"—is based to a large extent on research carried out by U.S.I.'s scientific staff and on experience gathered by its technical service engineers.

Abundantly illustrated, the booklet stresses practical shop information throughout, with only as much basic scientific theory as is needed to make the practical material readily understandable. The booklet discusses polyethylene properties, routine quality control tests and the various techniques for processing polyethylene—film and profile extrusion, extrusion-coating of paper and other substrates, wire and cable coating, injection molding, bottle blowing, thermoforming and others, along with related subjects such as heat sealing and film printing.

The booklet is filled with pages of invaluable shop advice for all types of processors. Many paragraphs are devoted to such specific problems as the causes and prevention of wrinkles in blown film, factors affecting the quality and economics of heat sealing, the machine conditions and resin properties which result in minimum "neck-in" and beading in paper coating and the effect of resin type and mold characteristics on cycle time or warpage.

"PETROTHENE® Polyethylene . . . A Processing Guide" is now available free to processors and convertors. For your copy, write to Editor, U.S.I. Polyethylene News, U. S. Industrial Chemicals Co., 99 Park Ave., New York 16, N. Y.

Poly-Coated Corrugated Board Now in Commercial Production

Poly-coated corrugated board is now available for the first time. The problem of high temperatures on the corrugator has been avoided by extrusion-coating the liner board at the mill level and using a cold adhesive for corrugating.

Photo courtesy Mead Board Sales Co.

Corrugating line on which polyethylene-coated corrugated board is now being produced.

Among the applications for corrugated poly-coated containers are:

Bulk shipment of meat, where moisture and grease-proof interiors reduce weight loss of the meat and eliminate loss of container strength through moisture pickup;

Shipment of furniture and other hard goods, where abrasion damage from the container has been a problem;

Bulk bakery and confectionary shipments, where absence of grease-wickage makes containers suitable for reuse or use as point-of-sale displays;

And in concrete construction forms, with the poly coating acting as a release agent.

Tests Show Many Aromatics Can Be Packaged In Poly

A two-year study has shown that a large class of essential oils can be packaged in polyethylene containers with little or no permeability loss.

The tests showed that oils of high viscosity and low terpene content experienced little or no weight loss.

In this group were such aromatics as Oil Bois de Rose; Oil Cassia Rectified; Oil Citronella Java; Oil Coconut Edible, N. F.; Oil Geranium Algerian; Oil Lignaloe Wood, Mexican; Oil Vertivert Bourbon; Oil Patchouly Penang; Oil Sesame U.S.P.; Oil Ylang Ylang; and Oil Almond Sweet expressed U.S.P.

From these, fragrance compounds have been developed for use in poly-packaged anti-perspirants, creams, lotions, and shampoos.

Cleveland OK's Plastic Pipe

The city of Cleveland has amended its building code to permit the use of plastic pipe for street-to-house water service lines. The decision was made after plastic pipe easily passed rigorous pressure, temperature and torsion tests.

Plastic pipe is considered ideal for street-to-house water lines, which do not involve high pressure or extreme temperatures. It costs half as much as copper tubing and costs less to install.

Air Flow Problems?

U.S.I. Technical Service has a portable air velometer capable of measuring up to 10,000 feet per minute. If you have a problem involving air flow, indicate this with your request for technical service so the U.S.I. engineer can have the instrument available when he calls.

DO YOU HAVE a new polyethylene packaging development you'd like the industry to know about? Make it routine to send your information on new developments to U.S.I. POLYETHYLENE NEWS.

Address the Editor,
U.S.I. POLYETHYLENE NEWS, U. S. Industrial Chemicals Co., Division of National Distillers and Chemical Corp., 99 Park Avenue, New York 16, N. Y.

Polyethylene Coated Board—

the market is growing

DETAILS ON BACK

Polyethylene extrusion-coated board is replacing conventional coated board in more and more applications. In packaging food and dairy products, furniture, chemicals, industrial parts, users are finding that only polyethylene offers all these advantages: EXCELLENT WATER VAPOR RESISTANCE • SUPERIOR GREASE RESISTANCE • HEAT SEALABILITY • GOOD ADHESION OF COATING • TOUGHNESS AND SCUFF RESISTANCE • WILL NOT SCRATCH OTHER SURFACES • PRINTABILITY • NO TASTE, NO ODOR, NO CONTAMINATION OF FOOD FROM COATING SUBSTANCE

In Polyethylene Coating, PETROTHENE® Resins Give You Top Results—

HERE'S WHY: PETROTHENE polyethylene resins are made at U.S.I.'s modern, integrated facilities at Tuscola, Ill., and have several important advantages over many other polyethylenes. PETROTHENE resins have good draw-down properties which enable you to coat at appreciably faster production rates. They give you good adhesion, with minimum hot melt oxidation. And PETROTHENE coatings have no taste or odor—an important consideration in many packaging operations. For all polyethylene extrusion coating applications, take advantage of the properties of PETROTHENE polyethylene. It costs no more.

U.S.I. IS HELPING YOU EXPAND YOUR COATED BOARD MARKET WITH INDUSTRY-WIDE ADS LIKE THIS—

To develop new markets and increase polyethylene coated board sales in present markets, U.S.I. is sponsoring a series of ads such as the one at left. These ads tell your customers about the market advantages of polyethylene-coated board. The series will run regularly in leading trade publications. For reprint copies of these ads as they appear, write:

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corporation
99 Park Avenue, New York 16, N. Y.
Branches in principal cities

taining some 11 per cent nickel addition, for systems serving under more severe temperatures and corrosive conditions.

These new fittings, joined with Victaulic groove couplings, are finding wide acceptance for the reason that plant down-time for pipe cleaning or alteration is reduced to an absolute minimum. The joint is leak-tight, able to withstand vibration or flexing, provides for some expansion or contraction, and a union at every joint.

The Victaulic method coupling utilizes a pressure-sensitive gasket that bridges the pipe ends, and a housing that fits sungly into circumferential grooves in the piping. The coupling is made tight with two bolts—or a specially designed toggle that opens or closes by hand, in one operation, without the use of any tool. If the purchaser prefers to groov· his own pipe, Victaulic can also ouer a simple-to-operate and light-weight grooving tool that can be easily carried anywhere in the plant or in the field.

New Modified Gum Rosin Sizes Available

Three new modified gum rosin sizes offering new economics in shipping, storage and sizing efficiency have just been announced by American Cyanamid Co.

Accobrite 4028 is an unfortified, modified gum rosin size shipped as 80 per cent solids. One of the lightest colored sizes available, it is low foaming and is said to be ideal for use in board.

Cyfor 4016A is a top grade, fully fortified, 70 per cent solids, modified gum size. Its low foam means high size efficiency, and its good color makes it an excellent choice for mills making book, bond, ledger and board.

Cyfor 4029 is an 80 per cent solids fortified size having extra-light color.

For more information contact American Cyanamid Co., Paper Chemicals Dept., 30 Rockefeller Plaza, New York 20, N. Y.

Closed-Circuit TP Camera Adjusts for Light Changes

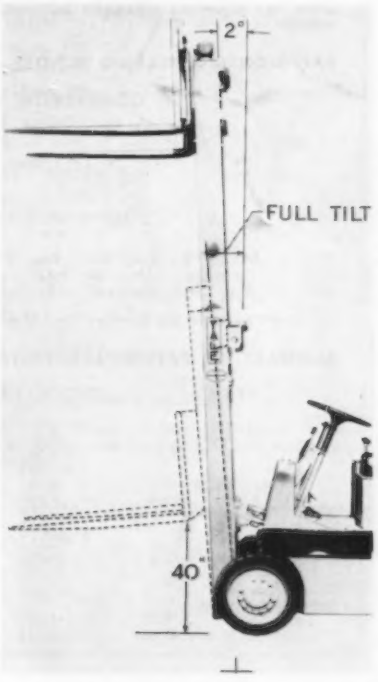
A new line of automatic closed-circuit television cameras which will automatically adjust to changing light levels has been announced by General Electric. Designated the TE-6-B and TG-2-B, the cameras utilize a regulated target voltage to maintain a uniform output-signal level over light changes greater than 150 to 1.

According to a company spokesman, the cameras are designed to meet the demand for low cost, unattended closed-circuit television systems. The equipment is especially adaptable to industrial, military and commercial uses. Accessories make possible remote aiming of the camera at distances up to one mile. For further information write General Electric Company, Closed-Circuit Television, Electronics Park, Syracuse, N. Y.

Tilt Restriction Device Makes Lift Trucks Safer

To provide a positive lift truck safety device where it is necessitaed either by the type of load handled or the height to which it must be raised. Yale & Towne has perfected a mast tilt restriction mechanism. The device can be applied to both gasoline and electric powered Yale industrial lift trucks.

Good safety practices dictate that loads such as wide diameter paper rolls or unitized smaller material which is loosely stacked should not be tilted



more than two degrees forward in a raised position. These same regulations apply to any type of load which is raised to an unusual height.

The new Yale tilt restriction device makes it impossible to tilt the load forward farther than the prescribed limit in the raised position. At the same time, it does permit full forward tilt of the load close to the ground where less safety hazard exists. In many cases, particularly in handling paper rolls, this unrestricted forward tilt in the truck channels' lowered position is necessary in order to properly grip and pick up the roll with a clamp attachment.

The standard Yale tilt control limits tilt above 40 inches off the ground. This limiting point can be regulated higher or lower to suit specific safety conditions. If the truck channels are tilted forward more than two degrees as the load is raised, the lift will stop automatically as soon as the load reaches the height of 40 inches. Lifting can be continued after the tilt has been returned inside the safe limit.

Complete details on this equipment may be obtained from Yale Materials Handling Division, Yale Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa.

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According to the manufacturer, straight-through construction permits drop-in packer replacement, speeding in-service maintenance and minimizing down-time. Valves for air service are fitted with molded Hycar "OU" packers, said to be unaffected by oil, grease, air or water. Moly-compounded O-rings, with self-contained lubricity, are supplied in valves for hydraulic or vacuum use. For corrosion resistance and minimum wear, valve bodies are cast of Navy M bronze and stems are hard-chrome plated stainless steel. Minimum pressure drop is attributed to flow area through the valves, reputed to equal nominal pipe size.

For further information and descriptive literature write to Valvair Corporation, 454 Morgan Avenue, Akron 11, Ohio.

Polyethylene Coated Board—

15 point board with a 14.4 lb. (1 mil) coating of PETROTHENE® 205 polyethylene resin. PETROTHENE coatings can be drawn down as low as 1/10 mil thickness.

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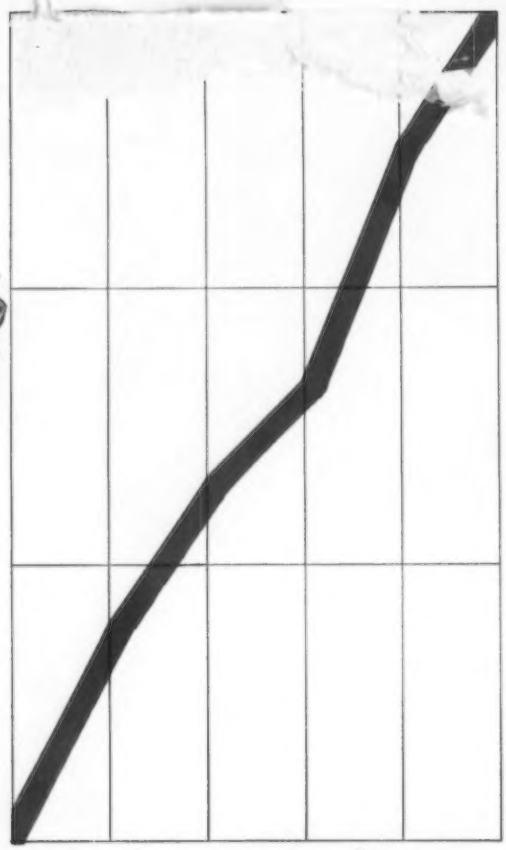

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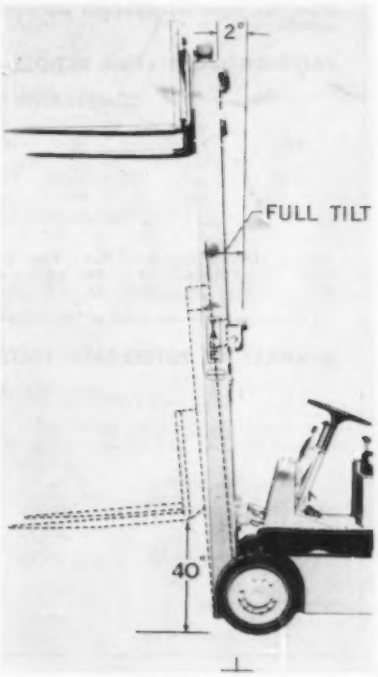

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6313

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1958	Oct. 25 91.9	Nov. 1 91.1	Nov. 8 91.5	Nov. 15 91.5r	Nov. 22 90.6
1957	Oct. 26 94.4	Nov. 2 94.6	Nov. 9 91.1	Nov. 16 91.9	Nov. 23 92.7

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	86.9	89.5	89.5	88.1	86.4‡	86.2‡	76.0‡	89.8‡	86.7‡	91.4‡	—	—	—
1957	94.2	97.0	97.1	94.0	94.6	93.3	75.6	90.7	86.0	93.0	90.7	81.5	90.9

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1951	1952	1953	1954	1955	1956	1957	1958
Year to Date	99.7	90.5	93.6	92.0	95.2	98.5	91.2	86.8
Year Average	98.0	88.6	92.3	91.6	94.0	97.9	90.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

1958	Oct. 25 94	Nov. 1 95	Nov. 8 93	Nov. 15 94	Nov. 22 94
1957	Oct. 26 97	Nov. 2 94	Nov. 9 94	Nov. 16 94	Nov. 23 94

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	80	86	88	84	84	86	76	93	90	95	—	—	—
1957	91	94	94	92	93	91	72	94	91	97	92	79	90

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Nov. 22, 1958	LAST WEEK ENDING Nov. 15, 1958	CUMULATIVE TO DATE Jan. 1 to Nov. 22, 1958
% Activity	94%	94%	87%
TOTAL	336,086	313,809	12,777,175
Liner	107,203	107,004	4,298,960
Corrugating Material	46,240	50,060	1,924,402
Chip & Filler Board	4,841	5,029	225,091
Total Containerboard	158,284	162,093	6,448,453
Folding	56,433	54,914	2,430,515
Set-Up	12,123	12,987	509,505
Special Food Board	26,672	27,801	1,181,471
Other	52,574	56,014	2,207,231
Total Boxboard	147,802	151,716	6,328,722
TOTAL ORDERS			
Received	272,186	284,288	
Unfilled End of Week	398,251	431,670	

Alvin H. Johnson & Co.

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415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

PRICES OF FIBERS

MARKET WOOD PULP

FOURTH QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	‡$90.00/ —	‡$80.00/ —	‡$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED NOV. 25

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$8.75/7.50	$7.25/7.00
3	$8.00/7.00	$7.75/6.00	7.25/6.75	6.75/6.50
4	7.00/6.00	5.75/5.50	6.25/5.75	6.00/5.75
5	6.00/5.50	5.00/4.75	5.50/5.00	5.50/5.00
6	5.50/4.00	4.25/4.00	4.50/4.25	4.50/4.00
7	4.00/3.00	3.50/3.25	4.00/3.00	2.75/2.50

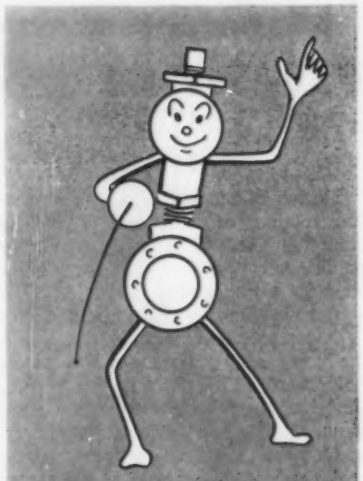
WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Dec. 1	Dec. 1	Dec.	Dec.
No. 1 Mixed Paper	$10.00/ 11.00	10.00/ 12.00	9.00/ —	14.00/ 15.00
No. 1 News	14.00/ 15.00	16.00/ —	20.00/ —	17.00/ 18.00
Overissue News (Lg. size)	16.00/ 18.00	13.00/ 17.00	25.00/ —	22.00/ —
Mill Wrappers	19.00/ 22.00	16.00/ 18.00	12.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	25.50/ 26.00	25.00/ —	25.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	35.00/ 40.00	35.00/ —	55.00/ 57.50
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	42.50/ —	37.50/ —	35.00/ 37.00
(Semi-chem. medium)	37.50/ 47.50	45.00/ 50.00	45.00/ 50.00	35.00/ 36.00
New 100% Kraft Corr. Cuts	40.00/ 42.50	50.00/ 55.00	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ 57.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ 58.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	62.50/ —	58.00/ 60.00
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	22.00/ —	35.00/ 42.00
White Newsblanks	60.00/ 65.00	50.00/ 57.50	45.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	55.00/ —	67.00/ 70.00
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— /
Hd. White Shvs.	90.00/ 95.00	95.00/105.00	85.00/ —	95.00/ 97.00
Hd. White Env. Cuts	105.00/110.00	110.00/115.00	90.00/ —	113.00/ —
Col. Tab. Cards	60.00/ 65.00	60.00/ 67.00	52.50/ —	38.00/ 42.00
Manila Tab. Cards	80.00/ 85.00	75.00/ 85.00	75.00/ —	65.00/ —
No. 1 Col. Ledger	32.50/ 37.50	25.00/ 30.00	45.00/ —	29.00/ 35.00
White Ledger	60.00/ 62.50	57.50/ 62.50	57.50/ —	50.00/ 55.00
Mixed Book & Mag.†	20.00/ 23.00	18.00/ 21.00	14.50/ —	— / —
No. 1 Books‡	25.00/ 30.00	20.00/ 22.00	32.50/ —	14.50/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.



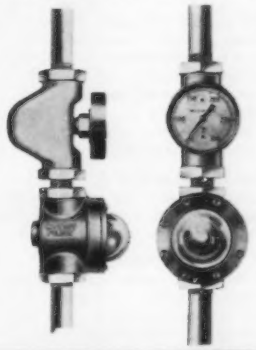
Always on Guard

Install a Ross Midwest Ball Sight Flow indicator on the discharge line of your dryer and you post a guard to tell you at a glance how the condensate is flowing.

Constant scouring action keeps the window open. No danger of clouding over to defeat its purpose.

An all-bronze fitting. Heavy Pyrex window. For pressures up to 125 lbs. and pipe sizes ½", ¾", 1" and 1½". Non-corroding temperature indicator, if desired.

A Few Ross Midwest Sight-Flow Indicators on a Few Discharge Lines will Convince.



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J. O. Ross Engineering Division
MIDLAND-ROSS CORP.

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NEWS OF SUPPLIERS

Borden Chemical Co., announces construction of a polyvinyl alcohol plant designed to produce 5 million pounds per year and scheduled to go on stream in October, 1959.

The new Borden plant, being erected at a cost of $1½ million, will adjoin the company's present polyvinyl alcohol plant at Leominster, Mass., where the company also manufactures polyvinyl chloride, polyvinyl acetate beads and emulsions, and specialty monomers.

A new continuous process, developed and engineered by Borden technicians during the last two years, will be employed in the new plant, Mr. Marusi said. The new process not only will assure the production of extremely high-quality polyvinyl alcohol, but also will be versatile enough to produce all grades and viscosities on a continuous basis, he added.

The Dow Chemical Co., will establish terminal facilities for 50 per cent caustic soda at the Associated Sales and Supply Co.'s public terminal, 1 Convent Street, St. Louis, Miss.

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INTERNATIONAL BUSINESS MACHINES CORPORATION

Walworth Co., has appointed John C. Wallace vice president and general manager, Fred W. Belz, president of the valve and pipe fitting company announced recently. In his new position, Mr. Wallace will be in charge of manufacturing, engineering, sales and research and development.

J. C. Wallace

Mr. Wallace was formerly vice president, operations. He has been with Walworth since 1957, when he joined the company as vice president of manufacturing.

Prior to joining Walworth, Mr. Wallace was vice president and general manager at Hunt Spiller Manufacturing Corp. in Boston. He has also served with Lima Hamilton Corp. and the Bessemer and Lake Erie Railroad.

Allied Chemical's Barrett Building Materials division has named Claude R. Veeder Western District sales manager it was announced by Jay Simson, Barrett sales director.

Mr. Veeder, who has been with Barrett since 1941, will continue to make his office in Chicago.

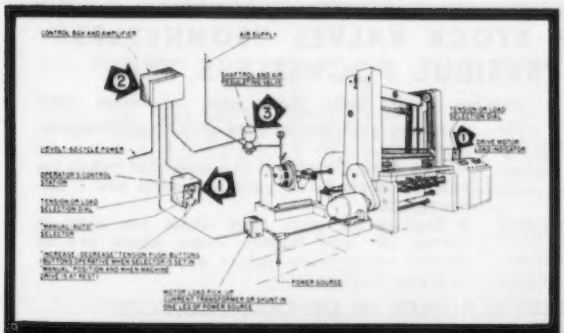
Dorr-Oliver Inc. announces the election of Henry J. Talbot to the board of directors at the recent quarterly meeting. The election of Mr. Talbot, managing director of Dorr-Oliver Co., Ltd., in England, extends recognition of the growing stature of the parent company's nine wholly-owned subsidiaries in Canada and abroad. The move will afford greater opportunity for communication among D-O associates on matters of concern to the parent Board of Directors.

Mr. Talbot first joined the D-O organization in 1929. He became joint managing director of Dorr-Oliver Co. Ltd., in 1950 and two years later was named to head its operations as managing director.

Tracerlab, Inc. announces the appointment of Edward J. Kraus as New England Industrial Engineer.

Mr. Kraus comes to Tracerlab from the R. S. Pettigrew Co. where he was a manufacturers representative. Prior to that he was connected with the St. Regis Paper Co. as an engineer, and the Sealright Co. as supervisor of the Industrial Engineering Dept.

Guest speaker A. J. Felton of Black-Clawson explains performance curves of conical and disc refiners to officers of the Delaware Valley Section of TAPPI at their November meeting. From the left are: Secretary Henry Smaine (P. H. Glatfelter Co.) Mr. Felton, First Vice-Chairman George Boger (Amalgamatd Chemical Co.), Chairman Don Kane (Hercules Powder Co.). Mr. Feltons talk was published in the Nov. 24th issue of Paper Trade Journal.



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NEW UNWIND TENSION CONTROL SYSTEM
FOR SLITTER-REWINDS

Compact, low cost electro-pneumatic system for controlling tension on paper, plastic, film, foil and fabrics.

EASY TO OPERATE

1. Set desired tension on Selection dial.
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3. Automatically adjusts air pressure to unwind friction brake and provides constant web tension from full roll to empty core on unwind.

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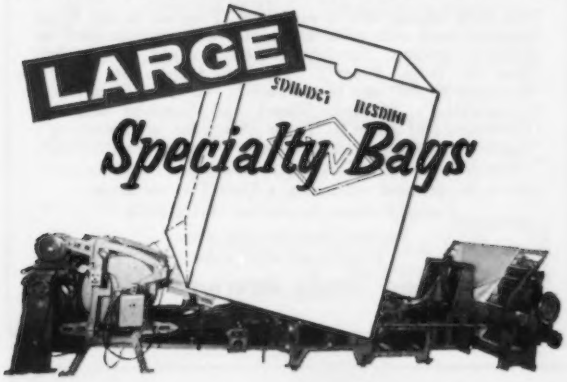
***Now!* HIGH SPEED PRODUCTION OF**



POTDEVIN Self-Opening-Square BAG MAKING MACHINE

All the modern engineering advances of Potdevin's smaller bag size machines are built into these machines to make the LARGE sizes so popular today. Machines have many new developments including pneumatic mill roll lift, pneumatic feed rollers, three-position finger adjustment, etc. Write for details.

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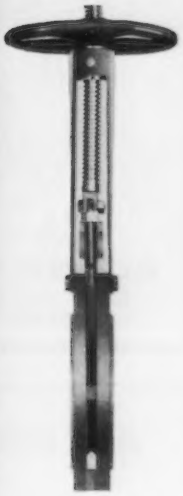

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METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
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by William Bond Wheelwright

This book begins with a survey of "Progress in the Paper Industry" and ends with a list of books recommended for collateral reading. The intermediate chapters are entitled: "How to Judge Paper"; "Physical Aspects of Paper"; "Practical Manual and Visual Tests"; "Essential Facts About Papermaking"; "Coated, Glazed and Specialty Papers"; "Permanence of Paper"; "Paper Difficulties in Converting"; "Paper as a Medium for Printing"; "Letterpress Printing"; "Offset Lithography"; "Intaglio Processes."

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Staff Position

For Engineering Design and Supervision of Pulp and Paper activities of large established Chicago Consulting Engineering Firm.

Graduate Engineer with extensive design experience in all phases of paper industry. Permanent KEY position with top compensation. Please send resume of experience in confidence to Box 58-313 Paper Trade Journal. D-8

MASTER MECHANIC

A paperboard manufacturing plant of a large national organization seeks a master mechanic with a practical background in all phases of paper mill maintenance. Must be an ambitious, capable supervisor. Mill located in suburban New Jersey area. Please send resume including salary requirement to Box 58-305 care Paper Trade Journal. D-22

EXPERIENCED SALESMAN on Multiwall and Special Kraft Sacks—Eastern Territory—Unusual Offering—Give full particulars in Strict Confidence. Address Box 58-308 care Paper Trade Journal. D-8

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Experienced in Fourdrinier operation. Several opportunities in Latin American mill. Earn excellent salary (with special income tax benefits). Fine living facilities. American school. Write in confidence to:

BOX 58-306

Care Paper Trade Journal

D-15

KRAFT PAPER BAG SALESMAN WANTED

Here is an excellent opportunity—

- for a salesman with multi-wall bag experience
- who can think creatively about baler bags and bulk packaging and develop sales in this field
- to join a large, rapidly growing eastern seaboard bag plant

If you feel that you are fully qualified, write in detail to BOX 58-309 care Paper Trade Journal. D-8

PAPER CONVERTING MACHINERY DESIGNER

Wanted by manufacturer of paper and film bag machinery and printing presses.

Located in pleasant New Jersey community.

Degree not necessary—only the ability and practical background for independent design of converting machinery.

Excellent opportunity for capable man. Salary open.

Please send resume of experience. Box 58-13 care Paper Trade Journal.

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1—65" 6-Color Kidder Master Anilixer
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1—49" 1-color Rotogravure Press
2—41½" 4-color Hudson Sharp Flexo Presses
1—40" 4-color Hudson Sharp Flexo, Roll to Sheets
1—40" 3-color Kohlback Flexo Press
2—36" 4 & 5 color P. W. Wolverine Hydro Presses
1—36" 2 color Champlain Gravure Press
1—36" 5 color Koenig & Bauer Rotogravure
1—30" 4 color Hudson Sharp Flexographic Press
1—24" 5 color Kidder Celloprinter
1—24" 3-color Rotogravure Press
2—9" x 12" & 2—12" x 12" New Era Presses

TAILPRINTERS

1—30" 5-color Gregg Flexo Press
1—16" 2-color Potdevin.

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Seybolds: 1—44" late model Seybold Model P4460 New 1952
Precision: 40", 50", 57" & 64"; 10Z: 40", 57" & 65"; 20th Century: 45", 54" & 60"; Dayton (6Z): 35", 40" & 84"; Holyoke: 65"; Sheridan: 36" new model, 55"; Oswego: 38" & 44" & 34", 54" Heavy Duty; Lawson: 52" Auto Space & 52" Standard.

CAMACHINES

1—72"—10-04 8 Shear Cut.
1—72"—10-5 rebuilt and guaranteed, with water cooled brake and anti-friction bearing. Speed 2000 F.P.m.
1—66" & 2—52" 9-5.
1—62" 26-2A with 100 score cutting units
1—62"—40—1—AF
1—52", & 1—42", Model 24-7.
1—42" Type 9-5 A Roller bearing 1500 fpm
1—42" Cameron 26-7M Duplex
1—42", 1—52" and 2—62" Type 6

OTHER SLITTERS

1—82" Langston Type—B
1—60" Langston Type A.
1—45" Ruf Duplex Winder.
1—42" Kidder Merchant Model
30" Fales Model—B Slitter and Rewinder
2—24", 1—30", 1—36" & 1—40" Kidder S.L. Shear cut

MISCELLANEOUS MACHINES

1—46" Reverse Roll Coater
1—48" Hot Melt Coated and Laminator
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1—60" Hot Melt Coaters & laminators
1—90" Duplex Hamblet, Layboy and Back Stands
10—Hamblet Sheeters 32", 42", 45", 50", 62", 68", 72", 84", 90" and 104"
1—30" Peters Sheeter, Model UD.
1—45" Beck Auto Piler
3—Standard Brightwood automatic Box Machines
4—Schultz continuous roll winders. Two—12", One 18" and 1—48".
3—Polyette Polyethylene tubular bag machines
2—Model B-10 Bagprint machines
1—Potdevin Model 224 Garment Bag Machine, 2 color printing, large range.
1—Potdevin Model 72—C Cellophane satchel bottom bag machine
1—Potdevin Model 296 Duplex Coffee Bag Machine
1—Weber Model "CN" Cellophane Satchel Bottom Bag Machine
1—Simplex Model 4-7 Cellophane Bag Machine
Die Presses: 1—60" x 14" Seeley, 1—50" x 33" Sheridan, 2—37" x 18" Sheridans and 1—44" x 22" Sheridan, 2—Hobbs Mfg. Co. 44" x 30" & 44" x 38"
1—9-roll Holyoke Super Calender with drive
3—Waldron Gummed Paper Breakers 50", 56" & 66"
1—Hayssen 4-roll Toilet Roll Wrapper
1—Hayssen Model 5-9 Cellophane Wrapper
1—50" Hudson Sharp Embosser-tinter.
1—48" Unicraft Embosser
1—30" Double Reverse Roll Coater
1—MD Knowlton Core Winder. Range ¾"-8" diameter
1—Vierengel Tin Tie Machine D-8

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BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs

CALENDER STACKS
1—3 roll 84″ calender stack.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 roll 82″ face.
1—5 roll 86″.
1—7 roll, 84″ face.

CHIPPERS
1—96″ Murray 4 knife Chipper—anti-friction bearings.
1—84″ 10 knife Carthage Chipper. Anti-friction bearings.
24—Chipper Knives 15⅞ x 8¾, 2 slot.

CREPING DRYER
1—48″ diameter x 120″ face, with frames, bearings, doctor blade and drive.

CRUSHERS & HAMMERMILLS
1—Murray Chip Crusher.
1—Williams Hammermill

CYLINDER MOLDS
2—42″ diameter x 106″ face
8—36″ diameter x 94″ face, hollow shafts, Very good condition.
1—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
1—36″ diameter x 84″ face
2—36″ dia. x 54″ face.
3—36″ diameter x 90″ face, 18″ diameter couch rolls.
1—60″ dia. x 170″ face.

DIGESTER
1—Biggs 12′ 6″. (Globe)

DISINTEGRATOR
1—Shartle 8″ disintegrator (new) with 125 horsepower induction motor (totally enclosed)

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1).
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
1—Beloit hypoid enclosed drive 60 h.p 5 to 1 ratio.
1—5 H.P. Reliance Drive, complete with starting equipment, like new.
1—20 H. P. U. S. Varidrive
1—Agitator drive

DRYERS
1—28″ diameter x 84″ face
2—30″ diameter x 40″ face with bearings
2—30″ diameter x 48″ face with bearings.
4—48″ dia. x 52″ face with frames, gears, bearings
1—36″ diameter x 44″ face
3—36″ diameter x 76″ face.
5—36″ diameter x 84″ face, anti friction bearings and gears.
1—16″ diameter x 54″ face (steel)
6—48″ diameter x 130″ face.
2—Cooling Drums, bronze 36″ x 128″, with frames, gears & necessary rolls to make up the unit. (After dryers)

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—62″ 2 roll Embosser.

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face
1—Rice Barton & Fales, Extractor Roll, 26″ diameter x 104″ face

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72″ face x 5″ dia.

FLAT SCREENS
1—8 Plate "Packer"
1—12 Plate "Packer"
1—16 Plate "Packer" late type roller shoes.

HOGS
2—Mitts Merrill Type 15 C.F.

JORDANS
1—Noble & Wood Mammoth
1—Noble & Wood Monarch, Type D.

LABORATORY EQUIPMENT
1—Bauer-McNett Fibre Classifiner, monel tanks, complete with copper screen plates.
1—Basis weight scale
1—16″ diameter x 24″ face Laboratory High Pressure Dryer
1—Press Roll 6″ diameter 24″ Face, steam jacketted
1—2′ Shartle Hydrapulper
2—8″ x 8″ Valley Sheet dryers
1—12″ x 12″ Valley Sheet dryer
1—6″ diameter Hydraulic Press
1—25 lb. Valley Laboratory Beater, with washer.
1—Experimental Digester (High Pressure)
1—15 lb. E. D. Jones Beater
3—Jonsson Test Screens
1—Sutherland Refiner
1—Schopper-Riegler Freeness Tester
1—8″ x 8″ Williams Sheet Mold
2—8″ x 8″ Valley Hydraulic Presses
1—Williams Smoothness and Formation Tester
1—6″ Mayer Coater, all rolls and pans bronze and steam heated. Used for brush, knife, reverse roll or dip coating, also waxing & plastic coating.
1—Clark Softness & Stiffness Tester
1—20″ Dilts Wet Machine
1—Williams Centrifuge

LAMINATING MACHINES
2—84″ Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap

MOTORS
1—100 H.P. Westinghouse Motor, variable speed, 585 r.p.m.

PACKAGING MACHINE
1—Morpac Packaging Machine (Details on request).

PRESS ROLLS
2—Chilled iron, chrome plated 9″ x 72″
1—Chilled iron, chrome plated 12″ x 100″
1—Chilled iron, chrome plated 10″ x 74″
8—sets (1 rubber, 1 chrome steel) 74″ face x 15″ dia., complete with bearings.

PULPERS
4—Dyno-Pulpers

PUMP
1—Morris-10,000 g.p.m. 25 ft. head (all bronze)

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″ 3 bowl Revolving Reel
1—134″ 2 drum
1—72″ Downingtown Reel, 2 bowl.

REFINERS
1—Dilts Classifiner, practically new
1—Rice Barton Dynofiner, details on request.
1—Dilts, Hydrafiner, stainless steel filling, anti-friction bearings, excellent condition, including 125 h.p. motor
1—12″ Wiener Refiner, with 200 h.p. motor

REGULATORS
1—Bird Consistency Regulator
1—Trimbey Consistency Regulator

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#1A Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALL
1—LaMorte, 48″ diameter x 82″ face cylinder mold.

SCREEN PLATES
Bird Rotary screen plates.

SHEETER
1—132″ Hamblet heavy duty duplex sheeter, anti-friction bearings throughout, including layboy and backstand.
1—84″ Hamblet, duplex, back stands.

SHREDDER
1—16″ "Swift" Paper Shredder

SLITTERS & WINDERS
1—32″ Cameron Type 9
3—42″ Cameron Type 6
1—42″ Cameron Type 8
1—42″ Cameron Type 26-2A
3—50″ Cameron Type 6
1—52″ Cameron Type 9
1—62″ Cameron Type 6
1—62″ Cameron Type 8
1—72″ Cameron Type 9
1—84″ Cameron Type 12
1—86″ Two Drum Moore & White 50″ diameter rewind.
1—96″ 4 drum Moore & White winder
1—128″ Beloit Shear cut winder, drive and variable speed motor.
1—102″ Cameron Type 18, 60″ diameter
1—122″ Cameron Type 18, 60″, anti friction bearings
1—136″ Langston, 60″ diameter

SLITTING DEVICE
84″ Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new)

STOCK PUMP
1—10 x 20 Shartle Triplex

STRAINER
1—Elliott Twin Strainer, Type R

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½″ face x 26″ diameter

SUCTION COUCH ROLL
1—Beloit, 36″ diameter x 246″ face, SKF bearings.

SUCTION FELT ROLLS
1—Gilbert & Nash 122″ face
1—Beloit Rubber Covered Suction Felt Roll 109 face x 20½″ diameter.

SUCTION PRESS SHELL
1—14″ diameter x 100″ drilled face, suction Press Shell only.

SUPER CALENDER STACK
1—9 Roll 56″

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face
30—4″ dia. x 130″ face (will cut to size)

THICKENERS
2—Iron End Vats with 36″ diameter x 84″ face Cylinder Molds and 20″ diameter couch rolls, including spare cylinder mold and spare couch roll, all anti friction bearing equipped.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder)

TRIMMER
1—84″ Seybold

VACUUM PUMPS
1—H-3 Nash Vacuum Pump
3—#1 Nash Hytor vacuum pumps
1—#7 Nash Hytor vacuum pump with 75 h.p. synchronous motor.
2—Connersville, 14 x 20
2—#3 Nash Hytor
1—#4 Nash, with motor
3—L-5 Nash Vacuum Pumps
1—L-6 Nash Vacuum Pump

VATS
2—D. J. Murray Co. Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

VIBRATING SCREENS
2—Hummer electric Vibrating Screens, stainless steel, new
1—Selectro 2 stage, 5 ft. x 10 ft.
1—36″ x 48″ Vibrating Screen

WEB GUIDE
1—110″ Stanford Constant Tension Unit, air operated.

YANKEE DRYERS
1—140″ face x 12′ dia., anti-friction bearings & stands.
1—84″ diameter x 56″ face.

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurs, Treas.
377 Frelinghuysen Ave.* Tel—Bigelow 3-3720 Newark 12, N. J.

Help Wanted

GENERAL PAPERMILL SUPERINTENDENT

For Latin America. Experienced in Fourdrinier and cylinder machines. Knowledge of Spanish desirable but not essential. Excellent salary and living conditions, including American school nearby. Income tax benefits. Applications confidential. Write in complete detail to:

BOX 58-307
Care Paper Trade Journal
D-8

RESEARCH CHEMIST

Excellent opportunity in paper research and product development. One or two years industrial experience desirable, but not necessary. Position in expanding Research Department with new and well-equipped facilities.
Send resume to:

Personnel Department
P. H. GLATFELTER CO.
Spring Grove, Pa.
Phone—Spring Grove 3211 D-15

GENERAL SUPERINTENDENT

Experienced man to function as General Superintendent in new Bleached Kraft operation in Midwest. Would be responsible to Production Manager for operation of new Pulp Mill—bleach plant and paper machine. Excellent opportunity with well established company. Forward resume of experience to Box 58-311 care Paper Trade Journal. D-8

MILLWRIGHT AND MECHANICAL SUPERVISOR

Paper Mill experience required. Familiar with drawings; ability to organize work. Good personality. An excellent growth opportunity. Over 35 years of age. Mill located in South Eastern Pennsylvania. Address Box 58-292 care Paper Trade Journal. D-8

PAPER MACHINE FOREMAN

Well established Mill in Midwest—need man with experience in manufacture of Bleached Kraft Food Board and kraft specialties. New paper machine and facilities — excellent opportunity. Forward resume of experience to Box 58-312 care Paper Trade Journal. D-8

Buy U. S. Savings Bonds

Help Wanted

WANTED

Young recent graduate in science or engineering with a few years experience in pulp and paper manufacture for interesting job in New York City office. Replies treated in greatest confidence. Please write Box 58-267 Paper Trade Journal.
TF

SUPERINTENDENT—To live in Florida.

The man we seek should have broad experience and knowledge of paper bag machinery with emphasis on specialty items. Excellent opportunity for right man with right background. Salary open. Submit detailed resume, giving qualifications and experience. Interview will arrange. Reply Box 58-314, care Paper Trade Journal. D-8

Situations Wanted

Engineer Available

M.E. with 34 years experience in pulp, paper and board mills as Chief Engineer, Plant and Project Engineer. Qualified to supervise mechanical and electrical maintenance departments, Power plant operation. Layout, design, construction and installation. Well versed in labor relations with proven ability to supervise personnel. Address Box 58-301 care Paper Trade Journal. D-29

MAN & WIFE want full charge of Converting Department, have many years experience as Foreman and Forelady in Tissue line, on Facial Rolls, single sheet and Towels. Some Napkins. Thoroughly understand repair and changeover of these machines, Dietz, Paper Converting and Hudson Sharp. Also both well trained on Lawson Wrappers and managing of help.
For further information and references write Box 58-310 care Paper Trade Journal. D-15

YOUNG—WIDE FOURDRINIER SUPV. EXPERIENCED STOCK PREPARATION — DE-INKING AND COLOR MATCHING—BLEACHED SULPHITE SPECIALTIES. WANTS ADVANCEMENT TO HIGHER SUPERVISOR STATUS. ADDRESS BOX 58-315 CARE PAPER TRADE JOURNAL. D-29

MECHANICAL ENGINEER—Young, aggressive; experienced in design of chippers and allied equipment, seeks responsible position in similar field. Address Box 58-299 care Paper Trade Journal. D-8

POWER ENGINEER—Technical background, experienced in operation, maintenance and plant betterment of steam power plants and personnel training. Address Box 58-302 care Paper Trade Journal. D-15

EXECUTIVE—Conversion of Boards and Papers. Currently Works Manager; desire change for challenging opportunity. Highly successful record in organization, production and development. Address Box 58-122 care Paper Trade Journal. D-29

Wanted

WANTED—Used Dilts Hydrapulper. Give full details. Address Box 58-316 care Paper Trade Journal. D-8.

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IMMEDIATE DELIVERY

1—128" 8 & S 10-Roll Calender Stack. King Roll 24" Dia. Heavy box frames, full set of doctors. Excellent Condition.
1—86" Farrel 8-Roll Calender Stack. Antifriction Bearings. Excellent Condition.
26—36" x 72" Complete Dryer Section, Stack, Drives, Etc.
10—48" x 150" Pusey & Jones Dryers.
1—84" Kamyr Machine, Complete. 75 ton per day output.
1—E. D. Jones Majestic Jordon No. A-482. New S.S. Fillings. Like New.
1—E. D. Jones Imperial Jordon, S.S. Fillings
1—Noble & Wood Mammoth Jr. Jordon, S.S. Fillings
1—Monarch Jordon, Model SP, Serial #21095, no fillings. Direct connected to a 75 H.P. G.E. 400 RPM Motor.
1—No. 3 Jones Pulpmaster, Late Type. Complete Drive.
1—No. 1 Jones Refiner. Direct connected to 100 H.P. d.p. S. B. 440 Volt Motor.
1—A.P.P. Rotary Centrifugal Pulp Screen, 40" Dia. x 42" Face. Serial #1274227. Like new. Capable of 40 ton groundwood pulp per day.
1—Trimbey Senior Rotary Screen.
2—Impco Rotary Pulp Screens.
3—No. 3 Impco Rotary Knotter Screens. S.S. Plates.
1—110" Pusey & Jones 2-Drum Winder. A.F. Bearings.
1—Hudson Sharpe Toilet Tissue Converting Machine. Ser. #2123. 8 Spare Mandrel Bars.
1—42" Dia. x 110" Face Pope Type Reel. Excellent Condition.
1—25" Dia. x 156" Face Sandusky Suction Couch, Bearings & Stands.
1—22" Dia. x 138" Perforated Face Sandusky Suction Couch, Bearings & Stands.
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1—54" Dia. x 48" Face Valley Iron Tub Beater.
1—Dilts 53" Dia. x 60" Face—2000 lb. Iron Tub Beater. S.S. Extractor Type Head.
1—Seybold Knife Grinder. Size G, 84" Table. Serial #4X802.
1—Sandy Hill Sulphur Burner. Complete.
2—#2 Bird Screens with Copper Vats & S.S. Plates.
1—Tugboat Annie Pulper.
1—Worthington Air Compressor, Model 5TR2. 2-Stage, Air Cooled. 5 H.P.
1—C.P. 12 x 10 Air Compressor, 100# Pressure.
1—I.R. 7 x 7 Air Compressor. 100# Pressure.
1—No. 244 Mattison 18" Core Cutting Saw —5 H.P. 3450 RPM, 3/60/220-440 volt.
1—90 H.P. Terry Turbine, Type G-4000/1000 RPM. For Paper Machine Drive. Complete.
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1—36" Putman H.D. Lathe—15' Centers.
1—24" x 6' L & S Geared Head, H.D. Machine Lathe. Taper Attachment, Hollow Spindle, Motorized.
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1—A.C. 75 H.P. 3/60/220-440 Volt, 720 RPM. T.E.F.C. Type ARZX Motor.
1—A.C. 60 H.P. 3/60/220-440 Volt, 720 RPM. T.E.F.C. Type ARZX Motor.
1—G.E. 100 H.P. MG Set, 250 Volt D.C.
1—250 H.P. Ingersoll Rand Diesel Engine Generator Set—G.E. Generator, 150 KW, 480 Volts, 720 RPM.

Save over 50% on your requirements for New Jordon Fillings. S.S., Bronze & Carbon Steel.

Gear Reducers, P.I.V. Drives, Generators, B.B. Pumps, Stock Pumps, Plunger Pumps, Etc.

1000 Electric Motors from ¼ H.P. to 600 H.P. in Stock.

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.

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GOUVERNEUR, NEW YORK
Telephone 333-334
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FOR SALE
IMMEDIATE DELIVERY
LOCATED—PHILADELPHIA, PA.

1—90" Yankee Fourdrinier Machine, Equipped with Suction Press, Head Box, Voight Inlet.

1—6 Ft. Lukes Steel Yankee Dryer—150# Test.

1—5 Ft. Moore & White Yankee Dryer.
The above two dryers are fully equipped with doctors, Honeywell speed indicators and air cylinders with Foxboro controls. All rolls (felt & wire) equipped with A.F. Bearings. Direct Motor Drives. Excellent Condition.

2—Collators.

1—#1 Claflin Refiner.

1—75 KW MG Set with Controls.

2—Embossers.

3—Beaters.

2—Savealls.

Many other items, including pumps, motors, laboratory equipment, etc.

Write—Wire—Phone For Your Needs

RUDERMAN MACHINERY EXCHANGE
GOUVERNEUR, NEW YORK
Telephone 333-334 TF

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158' Jeffrey Paper Roll Conveyor w/2-15 HP A.C. motors
54" Hamblett 2 knife sheeter w/layboy 44", 50", 65" Seybold cutters
Apex Printing Machinery Co. Inc.
210 Elizabeth St.
New York 12, N. Y. WOrth 6-0070
D-8

FOR SALE
1—30" 4 color Hudson Sharp (Type A-2) roll to roll Printing Press for paper and foil; 3 Flexo and 1 Gravure. Equipped with complete drying system, embossing unit and 5 h.p. variable speed drive, with all controls 22/60/3.
Delivered in 1957. Used 3 weeks.
Address Box 58-317 care Paper Trade Journal. D-8

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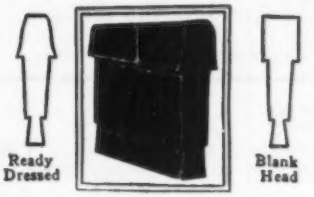

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ON ALL SIZES

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***FOR SALE* Lynch Morpac Wrapping Machine—Model E**
Completely automatic. Will wrap packages 7½ x 5 x ¾ to 15 x 10 x 5 at high speed. Printing attachment included. This machine in perfect condition—Priced for quick sale.
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Equalizers, Mayer Rods, Metering Rods.
Wire sizes #3 (.003) to #50 (.050).
Music spring wire and stainless steel wire.
DeNeve & Consler Co.
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D-26

New England concern desires manufacturer's representatives or agents with good paper mill contacts on all types of rolls in PenJerDel area and southeast.

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Industrial Roll Division
Orange, Massachusetts D-15

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Wanted for Export

Combination Yankee Machine 118"-137" wide trimmed width. To produce up to 50 tons daily, m.g. wrapping from 12 lbs. up.

REINHOLD-GOULD INC.
GAILLET & HARTIG DIVISION
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TOUR BOSSES
MACHINE TENDERS
MILLWRIGHTS
One Machine Board Mill.
Phone: Lancaster, Pa.
EXpress 4-4832 tf

WANTED—Breaker Beater Roll, 48" face, 72" diameter, overall length approx. 11 ft. Address Box 58-304 care Paper Trade Journal. D-22

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Well established Engineering Company with Sales Organization in Great Britain and Europe and specialized in equipment for paper and board mills wishes to contact manufacturers in the U.S.A. with a view to obtaining sole selling rights.

BOX NO. 58-296 .....Care Paper Trade Journal
D-8

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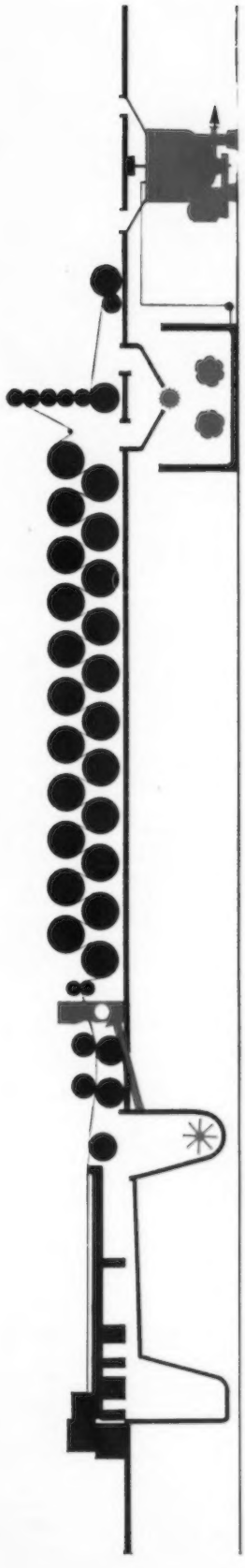

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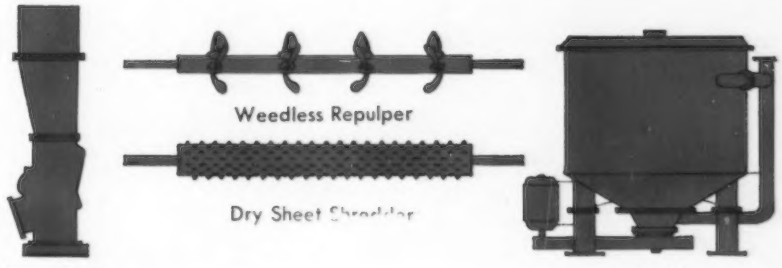

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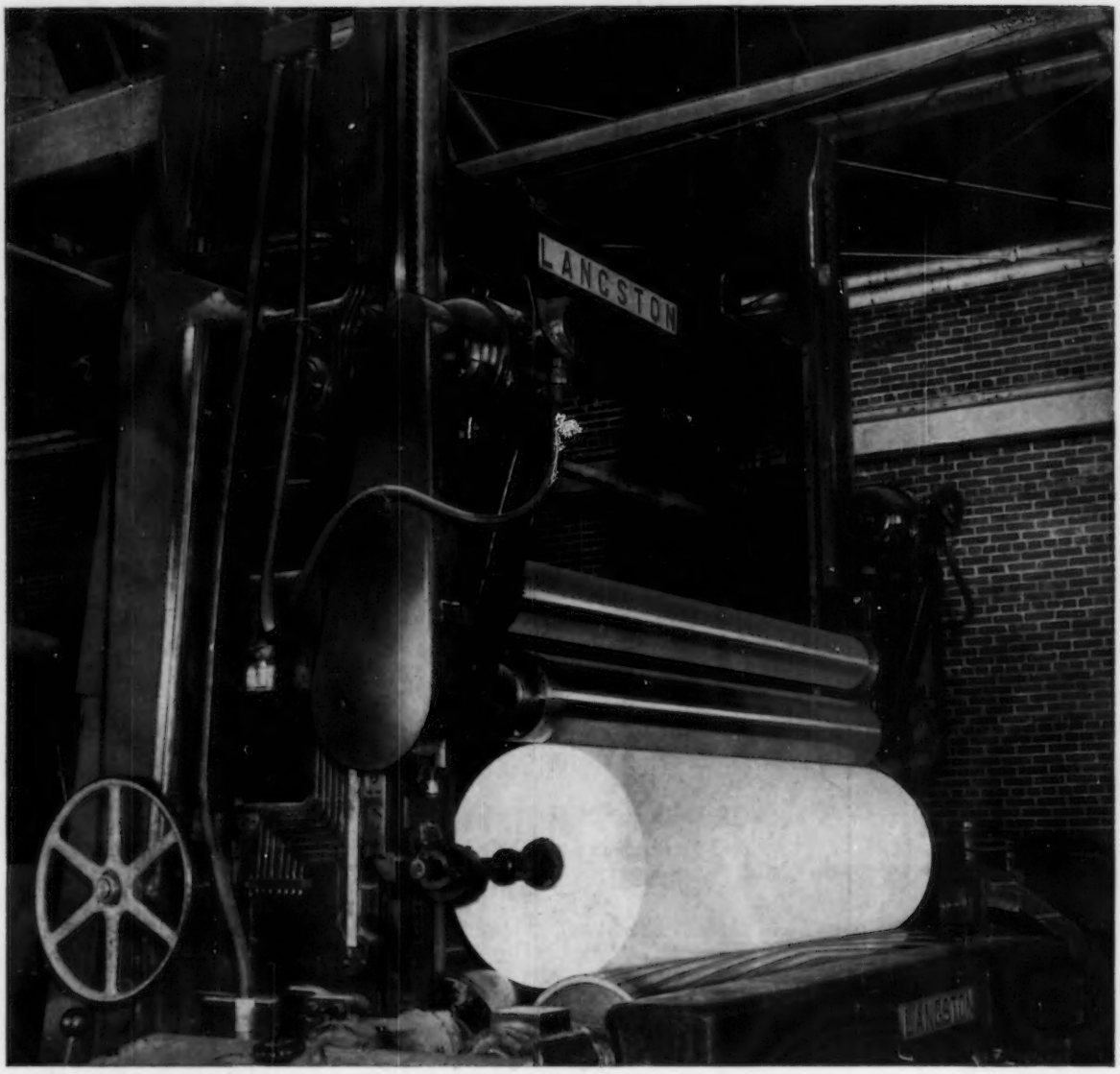

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